

# THE IRON AGE

A Review of the Hardware, Iron, Machinery and **Buildings**.

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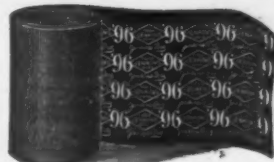
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# THE IRON AGE

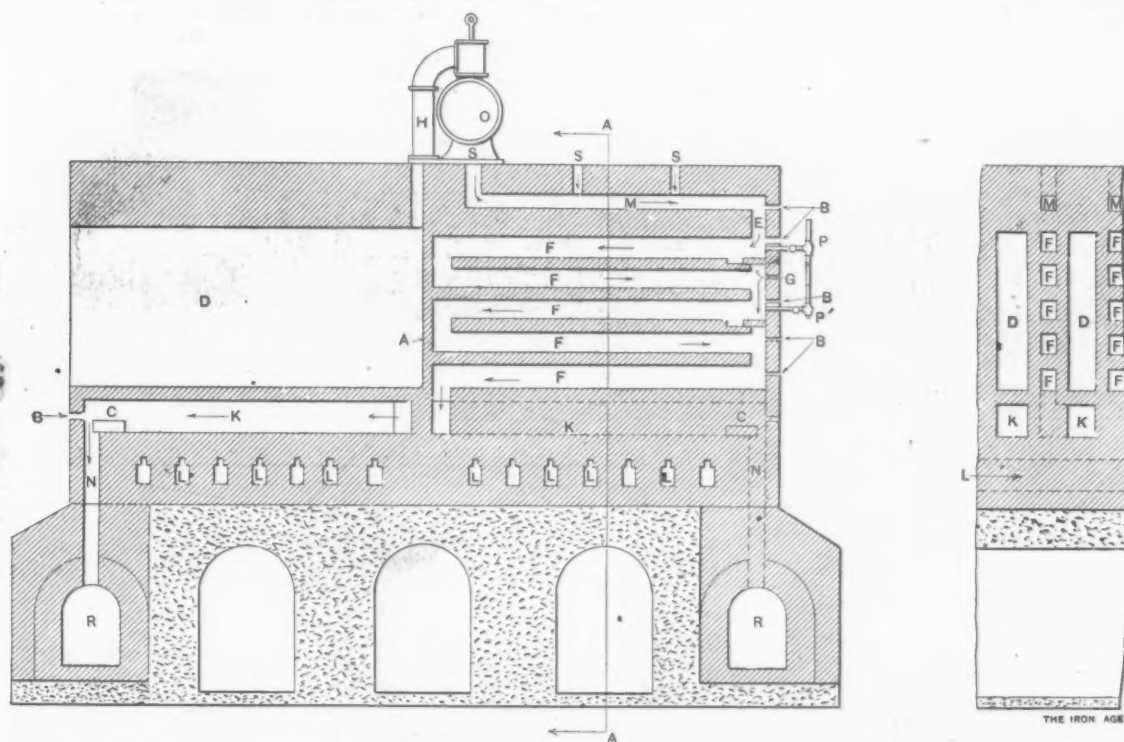
New York, Thursday, October 5, 1905.

## The Rothberg By-Product Coke Oven.

The coke oven designed by Dr. M. E. Rothberg belongs to the horizontal flue type, of which the Semet-Solvay oven can be considered the prototype. The Rothberg oven, which is shown in the accompanying illustrations, differs from the Semet-Solvay in that the vertical wall A, Fig. 1, divides the flues in the center and that standard brick is used instead of tile or special shapes in the construction of the oven. One set of flues serves for heating two adjacent ovens, while the Semet-Solvay has a solid wall between ovens, which necessitates separate flues and burners for each oven.

The Rothberg oven chamber is built from 33 to 40 feet long, 16 to 22 inches wide and 6 feet 6 inches to 7 feet 6 inches high. It has a capacity of from 7 to 11

By observation through peep holes, B, it is easily determined which course the gas should take to keep the heat of the oven uniform. The damper below the second burner P' is adjusted in similar manner. The products of combustion after passing through the flues F are led through the flue K under the oven and down through the flue N to the off gas flue R leading to the stack. Before the waste gases reach the stack they can pass through boilers and generate the greater part of the steam necessary to operate the plant. The stack draft is regulated on any oven by the damper C. By admitting the gas into the different flues and by using a regulating damper a very uniform temperature is maintained. Air can also be admitted through any of the



Half Section through Oven.

Half Section through Flues.

Fig. 2.—Section on A A, Fig. 1.

Fig. 1.—The Rothberg By-Product Coke Oven.

tons of compressed coal or from 6 to 9 tons of loose coal per charge. The average coking period is from 24 to 30 hours, but has been reduced to 22 hours on tests. The size of the oven and the coking period depend entirely on the quality of the coal and the purpose for which the coke is to be used. Metallurgical coke must be practically free from volatile matter (not more than 2 per cent.) and requires naturally more time to coke than the product to be used for domestic purposes, which can contain as high as 8 per cent. volatile matter.

The Rothberg oven has no regenerative chamber and no hot stoves, the air which is taken in through the openings S, S, Fig. 1, being heated in the recuperative flue M, to a temperature of 700 degrees F. Each second heating flue, F, is provided with a damper, G, as shown in Fig. 1. From the recuperative flue M the air passes through the vertical flue E and meets the gas from the first burner P. From this point the flame is either forced through the flue F to the center of the oven and back in the next lower flue or is allowed to pass to the next lower flue by moving the damper G.

peep holes B in case it is necessary for the proper combustion of the gas.

The advantages of these ovens, as stated by the designers, include the following: The cost of construction is reduced by the elimination of the solid wall, the regenerator and hot air fans. The air is sufficiently heated in the inexpensive recuperative flues. The ovens are easily operated, a uniform temperature being maintained without difficulty by the use of the regulating dampers, as every part of the oven is under independent control. Further, the operating expense is reduced by cutting out the hot air system.

### Rothberg Coke Ovens at the Cleveland Furnace.

Adjoining the blast furnace plant of the Cleveland Furnace Company, Cleveland, Ohio, are two blocks of 40 Rothberg ovens each, one block of 40 ovens having been in operation for seven months, the other 40 ovens for three months. Views of this plant are given in Figs. 3, 4 and 5. The ovens are 16 inches wide, 6 feet 6 inches high and 36 feet long. They are designed with a view to charging compressed coal. The coal is of such



a nature that strong coke to withstand heavy burdening in the blast furnace can only be produced by stamping the coal before charging in the oven. The same coal charged loose produces a very spongy, soft and brittle coke. The coal used is slack from Washington County, Pa., and is of the following average analysis:

	Per cent.
Volatile matter.....	34.50
Fixed carbon.....	54.50
Ash .....	11.00
Total.....	100.00
Sulphur (about).....	1.00

loose dry coal in the usual way and the coking time was 22 hours. This shows that two hours is lost in driving off the water in the stamped coal. The average analysis of the coke made is as follows:

	Per cent.
Fixed carbon (about).....	84.50
Volatile matter.....	1.50
Ash .....	14.00
Total.....	100.00
Sulphur (about).....	1.00

The specific gravity of the coke is 1.83, with a cell space of 41.13 per cent. and 58.87 per cent. cell wall.

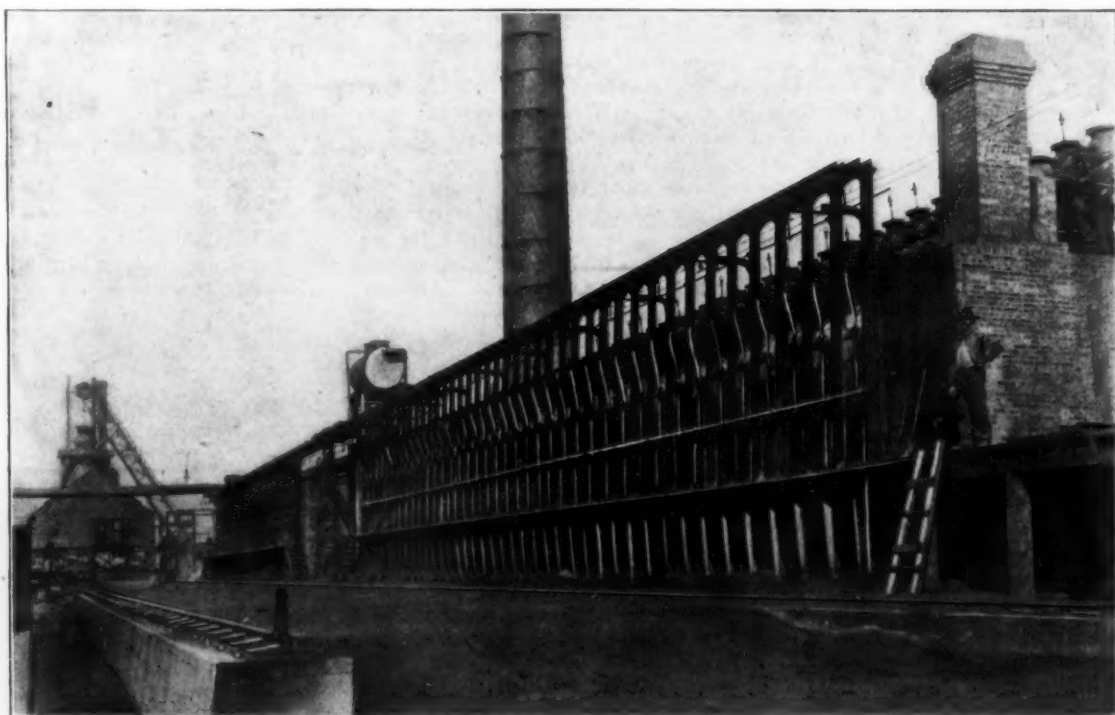


Fig. 3.—Coal Side of the Rothberg Coke Ovens, at Cleveland, Ohio. Cleveland Furnace in the Background.

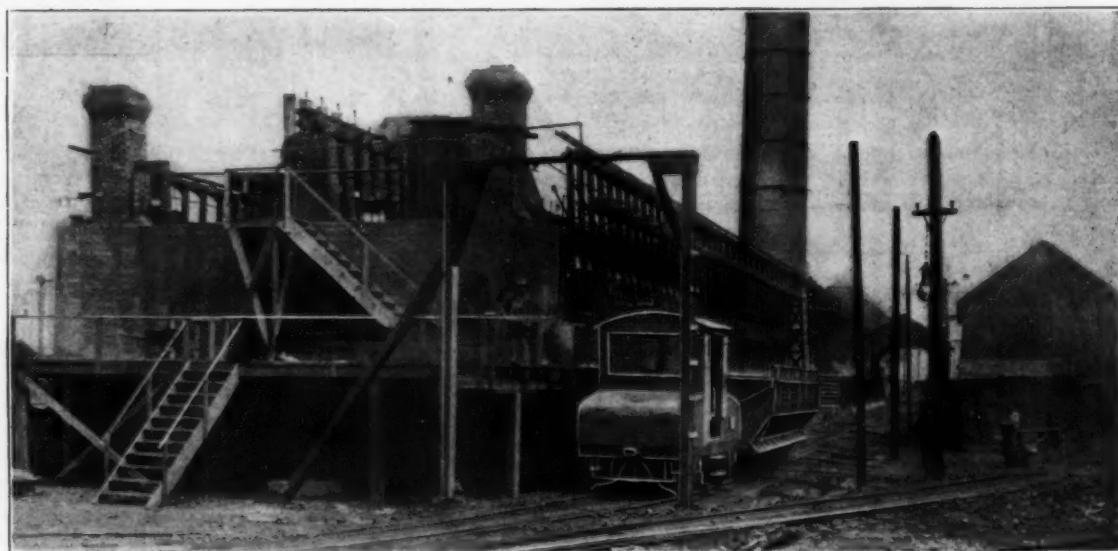


Fig. 4.—Coke Side of the Rothberg Coke Ovens.

The coal is crushed to pass through a 3-16-inch mesh and for convenience in handling in charging boxes it is found necessary to add 12 to 15 per cent. of water. The weight of a charge of compressed coal is about  $7\frac{1}{2}$  net tons, the volume being decreased about 25 per cent. in stamping, but the increased capacity of the ovens with stamped coal over that of loose coal is only 15 per cent. This is due to the necessity of the charge of coal being somewhat smaller than the oven. The yield of coke is about 71 per cent. and the coking time has averaged 24 hours. This is considerably higher than required when dry coal is charged. Several ovens were charged with

The coke is very hard and in the blast furnace comes down to the tuyeres practically the same size as charged. It shows very little crushing in the furnace and withstands the action of the gases well.

The percentage of breeze in the coke is small, not exceeding 1.50 per cent. This is due to the stamping and to the fact that the coke is pushed from the ovens into a car, quenched and taken directly to the furnace without rehandling.

#### Work of the Cleveland Ovens.

The records of the ovens for the first four months, from March 1 to July 1, 1905, show the following results:



Ovens in operation.....	40
Coal carbonized, tons.....	30,710
Coke made, tons.....	21,800
Tar produced, gallons.....	325,000
Tar produced per ton of coal, gallons.....	10.58
Ammonia gas (NH <sub>3</sub> ), pounds.....	149,000
Ammonia gas per ton of coal, pounds (equal to 19.36 pounds ammonia sulphate).....	4.81
Number of ovens charged.....	4,638
Average coal per charge, net tons.....	6.6
Average coke per charge, net tons.....	4.7

During the four months considerable delay to the coke plant was caused by the blowing out of the blast furnace for relining, which necessitated running the ovens much below their capacity for a time.

The coal yields 9960 cubic feet of gas per ton of dry coal. For two months the gas burning under the ovens was determined by measurement and found to be 6700 cubic feet per ton of coal carbonized, leaving the remainder, or 3260 cubic feet, available for other purposes.

The by-product plant is similar to many others in operation in the United States and need not be described.

The plant, of which details are given above, had originally ovens with vertical flues and regenerators, which were replaced by Rothberg ovens, the by-product plant and piping remaining as originally installed. The Coke

inland and export quotations, for the latter have been advanced, so that home consumers merely pay about 10 shillings more per ton than foreign purchasers at the present time, as compared with approximately 20 shillings in excess a year or so ago. Naturally the higher the export prices of partly manufactured steel the better are the German finishing mills able to compete in external markets, where such mills are able to compete at all, while at the same time larger inland sales are more profitable to the syndicate than export business at lower prices. The report does not include in the accounts the entire deliveries of 4,994,000 tons of steel. All it embodies for the financial year is a turnover of £12,727,637, representative of 3,043,050 tons of raw steel, or 2,619,971 tons of partly finished and manufactured steel. On the latter basis the average price works out at about £4 17s. 2d. per ton, while the average is £4 3s. 8d. per ton for raw steel.

Some information should surely be forthcoming in regard to international arrangements, yet the report is absolutely silent in respect to the working agreements with the Belgian and French producers of joists. It is equally reticent concerning the international rail convention, which embraces British, German, Belgian and

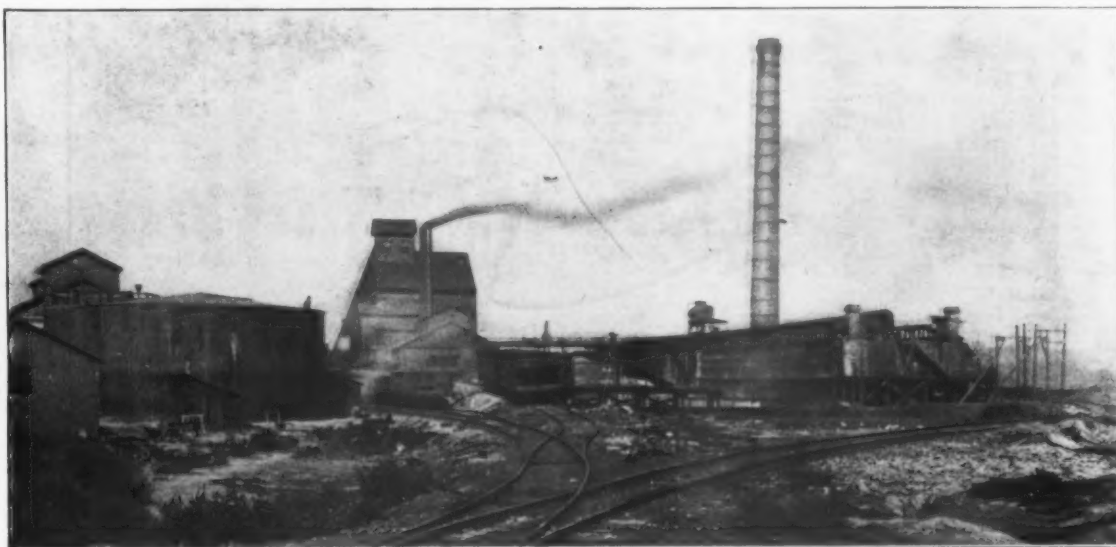


Fig. 5—View of Coke Ovens, Coal Compacting Plant, Gas Holder and By-Product House.

Oven Construction Company, with offices in the Rockefeller Building, Cleveland, Ohio, controls the Dr. Rothberg patents and designs and constructs plants under them.

### Higher Prices on German Export Steel.

In reviewing the report of the German Steel Syndicate on its first 13 months' operations the *London Engineer* comments as follows on the reasons for the increased sales of semifinished steel in Germany under the syndicate régime; also on the absence of any information in the report relative to international arrangements:

It is stated that since the syndicate came into existence the inland market has exhibited a greater purchasing capacity for semifinished steel, inasmuch as the quantity sold averaged 72 per cent. of the total output, the remaining 28 per cent. being exported; whereas in ante-syndicate days the exports averaged about 40 per cent. of the total production of ingots, billets and blooms. The larger amount of business transacted in the home market in the past year is apparently attributed to the efficiency of the syndicate. While this may to some extent account for the increased inland sales, owing to the greater confidence manifested since the establishment of the combination, it is highly probable that another cause has rendered very considerable assistance in bringing about this result. We refer to the increase in the syndicate's export prices for semifinished steel, or, in other words, to the reduction in the difference between the

French works, and as a consequence nothing is said about the suggested inclusion of the American rail makers within the scope of the latter agreement. [This was not only suggested, but was accomplished.—EDITOR.] In fact, the reserve exhibited on international questions is astonishing, and our readers must form their own conclusions as to whether the agreements in point are working well and likely to be continued. The report also apparently refrains from referring to the activity of the syndicate's London agency and the exclusion of British merchants outside of that organization from the business in semifinished steel, although it states that the foreign business in shapes is now mainly conducted by associations of merchants which have been constituted to obviate unhealthy speculation and also to secure for the syndicate influence in regard to the prices charged by the merchants in ordinary trade. On the whole, the report is remarkable for the meager amount of information which it sets forth, although it is doubtless a diplomatic document both from the German inland point of view and the standpoint of the international iron and steel trade.

The first all-steel railroad car built in England was brought out early last month. It was built by the Brush Electrical Engineering Company, Limited, and its appearance is expected to answer fully some of the unfavorable advance comments in England on this type of car. It has been urged that the vibration would be excessive and the traveling rough, but experience in the United States has borne out neither of these objections.

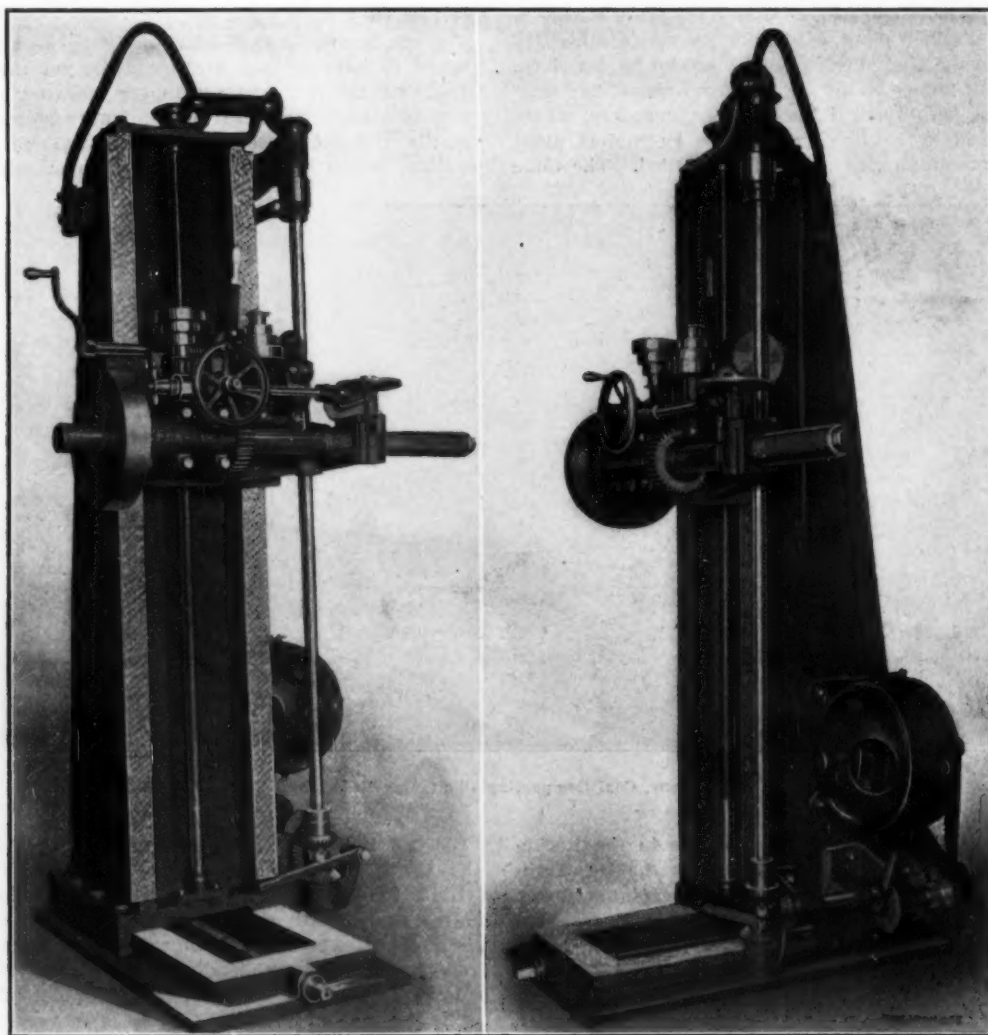
### The Espen-Lucas Portable Boring Machine.

A new 72-inch portable boring, milling and drilling machine has recently been introduced by the Espen-Lucas Machine Works, Philadelphia, Pa. This tool was particularly designed for a large electrical manufacturing plant to be used in heavy milling and boring work, but is equally well adapted to many kinds of general machine work. It is very rigid and heavy, being built to carry an 18-inch high speed steel inserted tooth cutter head. The range of speeds is large, and covers all the feeds necessary for drilling holes from as small as  $\frac{3}{8}$  inch in diameter up to the largest the machine is capable of boring.

The spindle is made of hammered crucible steel, is

tion for operating it is securely held to a floor plate by suitable clamps.

The Gardner Publishing Company, Cleveland, Ohio, which some time ago purchased the *Pattern Maker*, a monthly journal for employees in pattern shops, has just brought out *Wood Craft* as successor to the *Pattern Maker*. The first issue of *Wood Craft* has 86 pages, 9 x 13 inches, and contains interesting and well assorted articles applicable to various wood working lines. Leading articles deal with "Wood Working in a Camera Plant" and "Roycroft Ideals and Cabinet Making," both being attractively illustrated. The new journal is well edited and promises to take an important place in the field it has entered. G. H. Gardner is president of the



A Portable Boring, Milling and Drilling Machine, Built by the Espen-Lucas Machine Works, Philadelphia, Pa.

4 inches in diameter, and feeds through a gun metal sleeve, the traverse being 24 inches. It is supplied with a pin hole to retain bars and milling tools in place, and has a No. 6 Morse taper hole in the end. The head has a vertical adjustment of 72 inches, and can be securely clamped in any position for milling. The column carrying the spindle head has a feed of 12 inches in both directions, giving 24 inches to the spindle head for milling purposes. For boring and counterboring the spindle feeds in either direction and is specially geared for heavy work.

The machine shown in the engraving is driven by a 3 to 1 variable speed Crocker-Wheeler motor. The gearing is made of hammered crucible steel cut from the solid, and the bearings are all lined with bronze. A sling is provided at the top of the tool, so that it may be handled by a crane, and moved from place to place, or from one building to another if desired. When in posi-

Gardner Publishing Company and in charge of the business interests of the new publication. Robert I. Clegg is editor. Both are experienced in trade journalism.

Charles C. Davis of Germantown, Pa., has patented a process of cementing, or carburizing, armor plate. Carbonaceous material is packed between two armor plates and a direct electric current is passed through the carbonaceous material and the plates, facilitating the absorption of carbon. The plates are maintained at a temperature of from 800 to 850 degrees C.

A cargo of 4500 tons of Wabana ore from Belle Isle, Newfoundland, was unloaded at the dock of the Northeastern Steel Company, Middlesbrough, England, last month. This is the first cargo of Newfoundland ore to be imported into the northeast of England, though shipments have been made to Scotland and Germany.

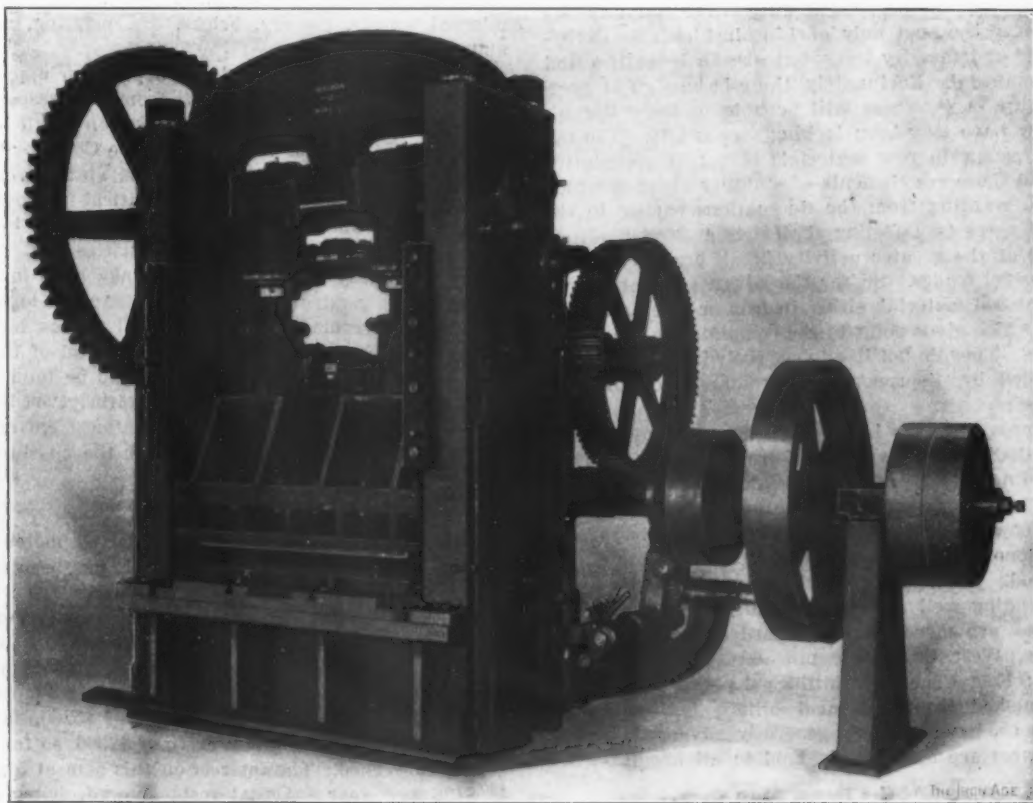
### The Niagara Double Crank Power Press.

A large and heavy double crank power press has recently been put on the market by the Niagara Machine & Tool Works, Buffalo, N. Y. This machine was especially designed for embossing sheets of steel, such as ceiling and side plates, &c. Its ample proportions and the great power exerted make the machine capable of producing sharp impressions. The construction is of the built-up type, the frame consisting of separate castings for the bed, uprights and crown piece. The working strain of the dies is withstood by four steel rods  $4\frac{3}{4}$  inches in diameter, which pass through the uprights and are secured by heavy forged nuts. If desired the rods can be shrunk in place.

The shaft is a heavy steel forging 8 inches in diameter in the bearings,  $9\frac{1}{2}$  inches in the crank pins and 9 inches in the center. The uprights are 32 inches wide and 9 inches thick over all. The complete machine

in small pieces and lastly the phosphor tin. For the soldering no acid is used, but the surfaces to be joined are first covered with a thin coat of the solder in the usual way and then brought together and heated with the soldering copper or a blow pipe or torch until the solder already upon them is melted, when pressure is applied and the joint is made. Aluminum must be heated to about 660 degrees F. before it can be soldered.

Some discussion has gone on in England recently over the proposal to introduce the skyscraper steel structure in London. B. H. Thwaite, the well-known metallurgical engineer, writes very favorably in London *Public Works* of the American tall building. He says there are in the United States many examples of artistic excellence in the lofty buildings of New York, Chicago and other cities, pointing out also that steel frame buildings are less costly and can be erected more rapidly than any other



A Heavy Double Crank Power Press, Built by the Niagara Machine & Tool Works, Buffalo, N. Y.

weighs about 45,000 pounds. It is back geared, with a ratio of 30 to 1. The speed is so regulated that the operators can remove and feed sheets between strokes without stopping the slide. Both pitmans can be simultaneously adjusted by a reverse ratchet motion. The ratchet, as shown in the accompanying illustration, is located between two collars, each of which carries a pawl. The two pawls engage the ratchet in opposite directions, one being used for raising the slide and the other for lowering it.

The moving of the slide is controlled by a friction clutch operated either by a foot treadle or a hand lever. By depressing the foot treadle the shaft is caused to make a complete revolution, the slide stopping when at the top of its stroke. With the hand lever the operator can start and stop the press instantly at any point of the up or down stroke.

Aluminum is now being used to some extent as a pattern metal, the former difficulties connected with soldering it having been solved. The most satisfactory alloy for soldering consists of 1 part of aluminum, 1 of phosphor tin, 11 of zinc and 29 of tin. To avoid loss of the more easily volatile of these metals the aluminum is melted first, then zinc is added in small pieces, then tin

type of permanent buildings. The London County Council, however, interprets the Building acts as opposing the erection of steel frame buildings in the way that would render them most advantageous. An effort is being made to secure some relaxation of the rules in respect to the use of steel.

The rails on the belt line railroad around Philadelphia are the heaviest used anywhere in the world, weighing 142 pounds per yard, or 17 pounds more than any previously fitted. They are ballasted in concrete, with 9-inch girders to bind them. All the curves and spurs have the same heavy rails, which were made especially for the Pennsylvania Railroad by the Pennsylvania Steel Company. An officer of the railroad states that this section of road ought to last for 25 years without requiring repairs. The section is considered superior to any other in existence.

The German Iron Founders' Association held a meeting at Eisenbach on September 18. The papers read included the following: "Blast Furnace and Foundry Coke," by Dr. Wüst; "Modern Molding Machines," by E. Baur; "The Composition of Pig Iron," by P. Goerens, and "Chemistry in Foundry Work," by C. Henning.



### British Iron Prices Advancing.

LONDON, September 23, 1905.—Whether the market warrants it or not, advances in price are just now the order of the day. The galvanizers this week have made a further advance of 5 per cent., the minimum selling price for 24-gauge corrugated sheets being £11 5s. per ton, f.o.b. Liverpool. It is held that this shows the increasingly prosperous conditions of trade uniformly enjoyed by the works, although the idea was recently expressed that prices were perhaps advanced too quickly and might possibly react upon the demand. Of this, however, there is no sign so far, while liberal orders continue to pour in from the Colonies and South America for forward delivery. The activity in this trade is said to be unprecedented. Several works have raised their limit to £11 15s., which shows an advance of about £2 per ton over the extreme prices accepted last winter.

In Sheffield the rising price of raw materials is a subject of common discussion. Sheffield manufacturers of finished products are nervous because of the simultaneous revision of prices, not only of Lincolnshire and Derbyshire forge and foundry irons, but also in hematites and Swedish material. Fortunately there is no sign at present that the coal owners will be able to force the advance they have long been looking forward to. The upward movement in raw materials is not of speculative origin, and there are elements of stability about it which have been wanting from the fluctuations earlier in the year, and there is a feeling that it is a fixed tendency indicative of the greater activity in all branches of the iron and steel trades. So far the advance is not shared by semifinished material, either in iron or steel, and it is this fact which gives point to the complaints of the manufacturers. They do not like to see their increased output accompanied by disproportionately larger accounts for raw material.

With regard to pig iron prices, the upward move is due to a distinct improvement of trade at the foundries. Iron molding has lagged considerably behind the steel trade in feeling the effects of the general improvement, but it is now coming into line, and consequently there is a better tone in the iron market locally than for a very long period. Contracts are being made for heavy supplies extending well ahead, apparently with the feeling that prices are more likely to harden than to recede. Hematites, West Coast, are now 60 shillings, less 2½ per cent.; East Coast, 64 shillings 6 pence, less 2½ per cent. Finished iron and steel billets, both Bessemer and Siemens, have not been generally advanced, but the current rates are more firmly held to all around.

#### Worst of the Depression Over.

In these circumstances the feeling is growing that the worst of the depression has been seen, though it is surprising how loath manufacturers individually are to admit that they are themselves doing better. There can, however, be little doubt as to the fact, for quite a number of the leading firms have extensions of plant in hand, and they would hardly be likely to risk fresh capital outlay unless pretty well convinced that confidence may be placed in the immediate future. The disquieting feature of the situation is the constant tendency for the larger and more widely known firms to share in the improvement of trade and to progress generally in far greater proportion than the run of firms in the second and third rank. This tendency is to be remarked, of course, in all forms of industry, and it is now invading the Sheffield steel trades to an extent little suspected by outsiders. In the high speed tool steel trade, for example, it is the biggest houses that are going ahead most rapidly. Firms with great names for much more important classes of work are now exploiting their reputations in such things as tool steel, drills, milling cutters, or, again, by taking a share in the file trade and engineers' tool trade, lines which have hitherto been left to specializing firms which are not themselves engaged in the heavier branches. This modern tendency undoubtedly makes for efficiency and cheapness, but it is full of grounds for anxiety on the parts of the firms which are finding new and powerful competitors almost every day.

### Depression in South Africa.

I have had occasion several times during the past year to draw attention to the unsatisfactory commercial condition of South Africa. The latest reports are certainly very depressing. For example, the South African Manufacturers' Association has issued a number of reports from the various leading industries "showing their ruinous position and disabilities consequent upon the present unfair customs tariff." The Select Committee's proposals—which are supported by both parties in the Cape Parliament—include the protection of the nine chief industries of the colony, the amount of the proposed duty being stated in seven cases, while the protection of the many budding industries of the colony is recommended in general terms. The Manufacturers' Association's proposals deal with the following: Biscuits and cakes, candles, carriage, wagon and cart building, chemists and druggists, confectionery, engineering, furniture and cabinet making, galvanized iron, zinc, copper and other sheet metal; joinery and wood, leather, milling, mineral waters, pottery, bricks, &c., printing, tailoring, and tobacco, cigars, &c.

A very vivid account of the depression appears this week in the *Westminster Gazette* from a correspondent at Cape Town. He says: "The depression in all branches of mercantile business throughout Cape Colony, and more especially at the seaports, has, it is stated, reached a point which can only be defined as critical in the extreme. The tale of bankruptcies grows longer week by week; forced sales of landed property, securities and merchandise are of daily occurrence; the banks have practically ceased making advances, even to clients of long standing; and Government and municipal bodies have been compelled to inaugurate relief works in aid of the starving, for whom no other employment can be found. Cape Town is suffering more severely than either Port Elizabeth or East London, because it depends almost entirely upon its local trade, and its commerce with the up-country districts is insignificant." S. G. H.

The relative economy of direct electric motor driving over the group system in textile mills has been given by M. H. Merrill in recently quoted figures from a large New England mill, in which a 200 horse-power motor operates 52 ring spinning frames. The cost of the motor was \$2060 and of the belts and shafting \$634, making a total of \$2694. With direct connection 52 3-horse-power motors would be required, at a cost of \$5260, showing a difference in favor of group drive of \$2566 so far as first cost is concerned. The interest on this sum at 5 per cent. is \$128 per year. Actual tests showed, however, that 37.5 horse-power was required to drive the shaft load alone with no frames in operation. The smaller efficiency of the small motors reduces this net difference to an equivalent of 18 horse-power, which, at \$25 per horse-power year, gives \$450 as the excess annual cost for power of the group system as compared with the individual. The net balance shows \$322 per year in favor of the direct connected drive, this amount being the interest on \$6440.

Boiler corrosion is due to other causes than mere hardness of the water. The present methods of water purification usually leave a residue of sulphate of soda in the water, which becomes more and more concentrated as time goes on and is found to attack the boiler to a considerable extent. Nitrates and chlorides, which are also found in the water, are even more corrosive than the sulphates, and worst of all is chloride of magnesia. It is therefore necessary to keep the concentration down below the point where these salts will attack iron or steel. As the water in the boiler will not be uniformly mixed the concentration is apt to be a maximum where the evaporation is greatest or at a point of greatest heat in the boiler, and these points are likely to be the first attacked. It has been recommended that a boiler be emptied once a week and thoroughly washed every two months in order to avoid the accumulation of these soluble salts.

### A New Method of Preventing Pipes in Large Ingots.\*

In the manufacture of large steel ingots for forgings or other purposes it is often necessary to allow for a discard as high as 25 or 30 per cent. of the total weight on account of the "pipe" formed as the metal contracts in cooling. The use of a sink head lined with fire clay or other refractory material, for the purpose of keeping the top of the ingot longer molten, is successful to a certain extent and results in a shorter pipe, but does not altogether eliminate the piping. Covering the molten metal with charcoal or similar material has the great disadvantage that a considerable carburization of the upper third of the ingot often results, while if slag or sand is used a portion is often drawn into the interior. The use of hydraulic pressure to compress the steel while passing from the molten to the solid state has the desired effect, but the cost of installing and operating machinery for this purpose is in most cases prohibitive.

The process here described, which in most countries is protected by patents, has been in use for a year at the

first. About an hour before the ingot is poured the fuel is brought to redness by means of a gentle blast, the flame which escapes at A being used to warm the mold and more particularly the refractory lining of the head. Shortly before the steel is poured the apparatus is drawn

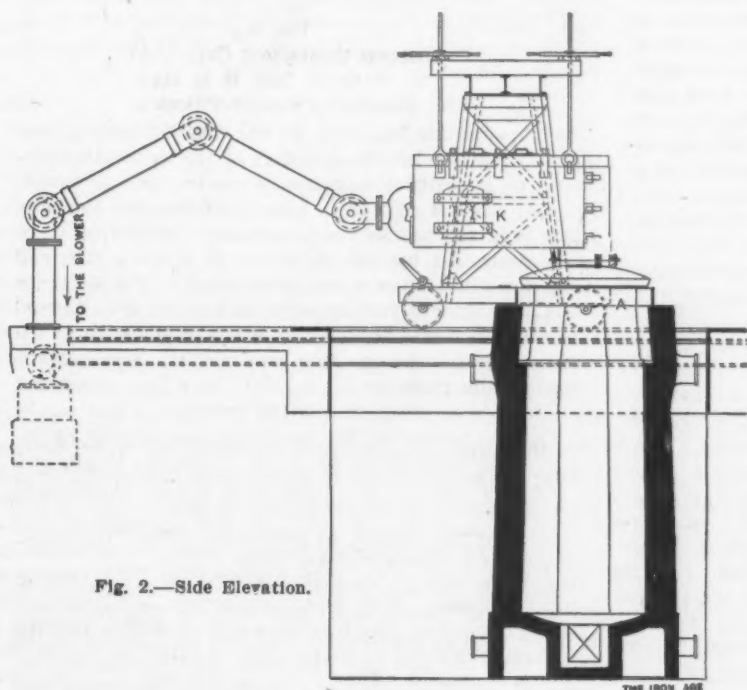


Fig. 2.—Side Elevation.

Gutehoffnungs Works in Oberhausen, Germany, giving good results on ingots up to 60 tons weight. It is based on the theory that external heat is necessary to keep the steel in the sink head molten until the ingot is solidified and all danger of piping has passed. This heat is obtained by blowing cold air through incandescent coke, so regulating the pressure that in the fuel chamber only carbon monoxide is formed, combustion to carbonic acid being completed in the space above the sink head.

The original article reproduces photographs of four ingots cast by this method, which show almost complete freedom from pipes. The weight and amount of discard necessary with each of these ingots were as follows: No. 1, weight 11.6 gross tons, discard 7.3 per cent.; No. 2, weight 17 tons, discard 4.98 per cent.; No. 3, weight 17.2 tons, discard 5.52 per cent.; No. 4, weight 16.4 tons, discard 3.6 per cent.

The accompanying illustrations show the arrangement for ingots from 10 to 60 tons. Fig. 1 is an end elevation, Fig. 2 a side elevation and Fig. 3 the plan. The method of operating is as follows: The chamber K is filled to the top with pieces of hard coke about the size of a man's

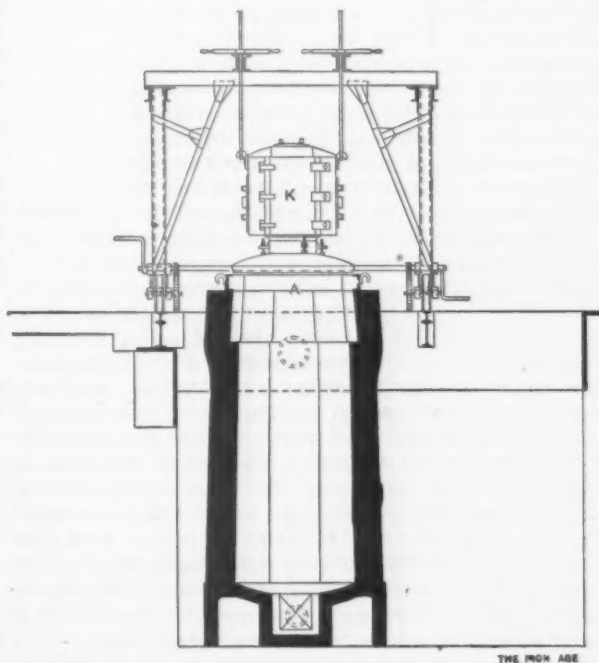


Fig. 1.—End Elevation.

back out of the way and at the same time the full pressure of blast is put on, so that by the time the mold is full, in 15 to 25 minutes, the fuel is at a bright red heat, ready to be replaced over the mold. As may be seen from the illustrations, the apparatus is placed on a carriage, which can quickly and easily be moved forward or back. As cold blast is used the blower can be placed close to the casting pit, so that the whole arrangement is very simple and compact.

Attention is called by the *London Times Engineering Supplement* to the fact that while the present price of tin is high there are fewer tin mines worked in Cornwall

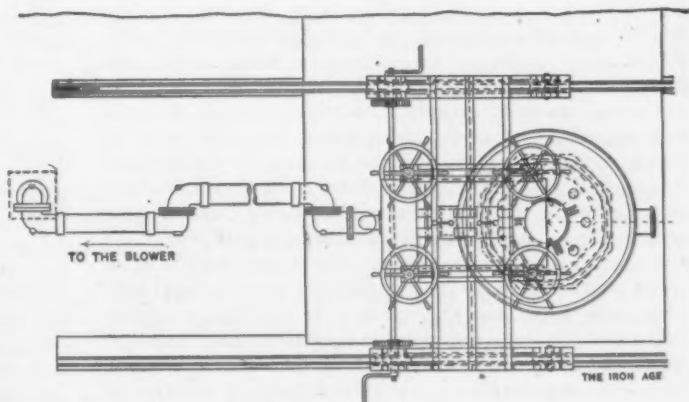


Fig. 3.—Plan.

than there were some years ago, when tin brought only half as much. Some of these mines closed down owing to low prices and have not been reopened. It is believed that they could now be worked to advantage by adopting electrical power and making extensive use of rock drills. Some of the mines were closed because of unfavorable leases. It is said that the two essentials to the recovery of the Cornish tin mining industry are new capital and a more liberal policy on the part of holders of mineral properties.

\* From F. O. Belkirsch in *Stahl und Eisen*.



## The Eastern Pig Iron Association on Lake Champlain

As the guests of Witherbee, Sherman & Co., Port Henry, N. Y.; Pilling & Crane, Philadelphia, and the Delaware & Hudson Railroad Company, a number of members of the Eastern Pig Iron Association spent two days last week visiting the principal mines and furnaces of the Lake Champlain district. Starting from New York on Monday evening, on the Albany night boat, the party used a special train from Albany and reached Mineville, the seat of the mining operations of Witherbee, Sherman & Co., in the forenoon, being received by S. Norton, the general manager. Among the guests were B. F. Fackenthal, Jr., president of the association and president of the Thomas Iron Company; F. C. Smink, president of the Reading Iron Company, Reading, Pa.; Edgar S. Cook, president of the Warwick Iron & Steel Company, Pottstown, Pa.; W. S. Pilling of Philadelphia, secretary of the association; David H. Thomas of Hokendauqua, Pa.; J. C. Rand, president of the Spanish-American Iron Company; Leonard Peckitt, president of the Empire Iron & Steel Company, Catsauqua, Pa.; Frank Amsden of the Paxton furnaces, Harrisburg, Pa.; A. A. Fowler of Rogers, Brown & Co., New York; R. L. Ahles of Pequest Furnace; Edward Thomas of Catsauqua, Pa.; L. W. Francis of Witherbee, Sherman & Co.; Abel I. Culver of Albany, second vice-president of the Delaware & Hudson Railroad Company, and Axel Eckstrom of Albany, consulting electrical engineer of the Chateaugay Ore & Iron Company.

A full description of the mines and plant of Witherbee, Sherman & Co. was published in *The Iron Age*, December 17, 1903. Since then, however, very extensive improvements have been made and plans then developing have been brought to maturity.

### Developments at Mineville.

The party first visited the Smith mine, whose equipment has been completed. It consists of two two-stage electrically driven Ingersoll-Sergeant air compressors, serving seven drills each, driven by two 75 horse-power General Electric induction motors, a Wellman-Seaver hoist driven by a 100 horse-power motor and a 100-gallon electrically driven mine pump. The electric power is furnished by the central power plant already described, synchronized with the current from a water power plant located 11 miles distant at Wadham's Mills. From the present development there an average of 250 horse-power is available. There is under construction a second water power plant at a point 2 miles above the first locality, which it is expected may yield 650 horse-power additional, as a maximum, this enterprise being carried out by Col. Daniel F. Payne.

At the Harmony property an interesting development is being made. The ore as it comes from the mine is damp enough to cause fine ore to cling to its surface. The result is that it is very difficult to do satisfactory cobbing by hand. Experience has shown that a magnetic machine can distinguish between ore and rock when the human eye fails to do so. The entire output of B shaft is, therefore, to be put through a mechanical cobbing plant, being first crushed in a 30 x 18 Blake crusher and then put over a Norton magnetic cobbing machine. The rejections then go to the regular separating mill. The Harmony cobbing plant is designed for a capacity of 600 tons of rock per 20 hours.

At the F. e Harmony hoisting and compressor plant a new transformer house is being added to step down the voltage of 6600 of the water power line to 3300 volts.

The No. 1 concentrating mill was remodeled within the brief space of three weeks in order to meet the changed conditions brought about by the introduction of magnetic cobbing at the Harmony mine, and Mill No. 2 now takes care of the Old Bed mine ores. The ore is crushed to ¾-inch size and is put over a single drum Ball & Norton machine, which takes the pure ore out of the product. The rock is then crushed to ¼-inch size and is treated in four belt type Ball & Norton machines.

Among the other improvements under way is a motor generator set at the Old Bed power plant for mine lighting, connecting to the alternating current. The direct current is used for the arc lights and for the separating machines. The old steam unit is to be held in reserve for heavy loads. There is also being built a two-stage air compressor driven by a 200 horse-power motor, which will have a capacity of 1200 cubic feet of free air.

Witherbee, Sherman & Co. are having a thorough geological surface and underground survey made of their whole property. The territory above the Smith mine is being prospected by diamond drilling to block out ore bodies for future development, and at Barton Hill work is progressing which holds out the promise of opening bodies of Bessemer ore.

After luncheon at Memorial Hall the party returned to Port Henry to inspect the furnace operated by the Northern Iron Company, controlled by Pilling & Crane of Philadelphia. It is under the management of F. E. Bachman, who is general manager also of the Standish Furnace, leased by the same interest.

### The Standish Furnace Plant.

After spending the night at the famous Hotel Champlain, at Bluff Point, the members of the association proceeded on Wednesday morning by special train to Standish, near Lyon Mountain, to inspect the Standish Furnace, which is being built by the Chateaugay Ore & Iron Company, controlled by the Delaware & Hudson Railroad Company. The furnace has been leased to the Northern Iron Company. The furnace occupies the site of a charcoal furnace, which was replaced by a larger stack, in which both charcoal and coke iron was made. Some of the records made there by H. R. Hall have been presented in full by him. They settled the question of the use in the furnace burden of fine magnetic concentrates exclusively. The furnace ran for about 18 months in all, and it was then determined, in line with the broad policy of the Delaware & Hudson Company of developing the ore resources of the district, to practically rebuild the stack. Virtually it is a new furnace plant.

Standish Furnace, which is to go into blast early in November, as rebuilt is 80 feet high by 15½ feet bosh. It has a 9½-foot hearth and is 11 feet in diameter at the stock line. It has the Firmstone modification of the Longdon top, the stock being handled by the Crane vertical hoist. The gas is taken off by four downtakes leading into one, with the object of retarding the velocity of the gas and thus promoting the deposit of dust. The gas first enters a dust catcher of the ordinary construction and then a gas washer of special design. The entire stack is new, but there are three Roberts hot blast stoves 16 x 71 feet, which served the former furnace, and one new 16 x 71 foot Foote stove. The engines are one new Allis 44 x 84 x 60 inch vertical and one old 30 x 60 x 48 inch Southwark. The boiler plant consists of four old water tube boilers of 156 horse-power each and two new Stirling boilers of 300 horse-power each. The plant is provided with a complete bin system to handle the ore into buggies. Its estimated capacity is 175 tons. Using Chateaugay concentrates exclusively it will make a special low phosphorus Bessemer pig. We understand that the product has been sold to a leading interest for a considerable period for consumption in New England for the manufacture of open hearth steel.

### The Chateaugay Iron Mines.

The party then visited the nearby mines of the Chateaugay Ore & Iron Company, at Lyon Mountain, in connection with which very extensive plans for remodeling on modern lines are being worked out. The Lyon Mountain deposits have been known and worked for many years, but the openings are scattered along the length of the upper vein and appear to have been conducted without any comprehensive general plan and in a very unsystematic manner. It is



proposed now to sink a vertical shaft in the hanging country, which will reach the ore body at a depth of about 650 feet. At about the 600-foot level tunnels will be driven to reach the present workings, and these tunnels will be the main transportation level, to which the ores will be delivered by gravity and in which the rock will be handled by electric traction to the shaft.

The Chateaugay deposits, there being two, the upper and the vein, are very large and have been opened out and traced for a considerable distance. Careful measurements made have led to the estimate that there are now available for mining, above the new tunnel level in the upper vein alone, 20,000,000 tons of ore, and it is believed that the back vein will furnish a like amount. The workings, however, have been confined so far almost entirely to the upper vein. The plan is to mine the whole deposit, rich and lean, leaving ample pillars to support the roof.

The Chateaugay deposits furnish a rock practically all of which must be concentrated. It is a proposition to handle economically a very large tonnage both in mining and in milling. Modern progress in the application of electricity to mining in the line of concentrating the power generation for scattered operations in the milling of ores and in magnetic separation has revolutionized the utilization of comparatively low grade ore bodies like those of Lyon Mountain. Their checkered career, with scattered openings and with wet concentration, is no criterion for the future, particularly now since the fear of fine ores so long harbored by furnacemen is disappearing after the records achieved by Bachman, Hall and others. The work being done at Chateaugay and at adjoining mines of the Arnold Company, to be referred to later, is therefore being watched with interest by iron makers and engineers. There can be little doubt that to the Eastern iron industry a very important source of supply of rich ores will be opened up, a fact which is not yet being generally realized.

The one fact of great importance, so far as Chateaugay is concerned, is that the ores are very low in phosphorus and for that reason have long been the main dependence of the Eastern makers of low phosphorus pig iron. We append complete analyses of the crude ores, the concentrates and the tailings:

	Crude ore.	Con-	Tailings.
	Per cent.	centrates.	Per cent.
	Per cent.	Per cent.	Per cent.
Iron peroxide.....	31.48	60.128	4.57
Iron protoxide.....	15.81	28.850	3.60
Manganese oxide.....	0.115	0.107	0.124
Silica.....	33.16	6.880	58.56
Alumina.....	4.90	0.900	10.72
Lime.....	4.96	0.600	8.24
Magnesia.....	2.10	0.405	4.06
Phosphoric acid.....	0.043	0.023	0.004
Sulphur.....	0.027	0.022	0.035
Titanic oxide.....	0.427	0.417	0.457
Iron protoxide (in gangue).....	2.83	0.257	4.76
Potash.....	1.438	0.494	1.61
Soda.....	2.283	0.777	2.99
Moisture.....	0.25	0.040	0.12
Totals.....	99.823	99.960	99.910
Iron (total).....	36.50	64.72	9.70
Iron (magnetic).....	34.30	64.53	6.00
Phosphorus.....	0.019	0.010	0.028
Manganese.....	0.089	0.083	0.096
Titanium.....	0.256	0.250	0.274

As a part of the comprehensive plan of development of the Chateaugay mines the company has planned the building of a large central power house. The first section of the plant is now being provided for. It will contain three 350 horse-power Stirling boilers, one 500-kw. General Electric Curtis turbine, already ordered, and one 25-kw. Curtis turbine as an exciter and feed water heaters, &c. A condenser plant is to be put in at a later date. The plant will include a two-stage air compressor capable of delivering 2000 feet of free air at 80 pounds pressure. The power plant is to be located conveniently to the new shaft.

The foundations are in for the first unit of the magnetic concentration mill, which is laid out for three such units. Each unit consists of Blake and Gates crushers, supplemented by a set of 40 x 30 inch rolls, from which the crushed rock goes to a Rowan dryer. The dried ore

is distributed to four sets of fine rolls which crush it down to ¼ inch and under, from which it goes to four sets of magnetic separating machines. The middlings are crushed in one set of rolls, while the tailings from the main separating machines go to another set of crushing rolls, the crushed material flowing to three sets of magnetic machines. The product goes to yet another series. It is expected that the final tailings will not carry more than 5 per cent. of magnetite. The products of the mill will be conveyed to loading bins and will consist of concentrates, coarse sand and engine sand for sanding track. The estimated capacity of the mill is placed at 50 tons of rock per hour per unit. The mill will be driven electrically, each unit requiring two 200 horse-power motors and one 15 horse-power motor. It is expected that the first unit will be in operation in January.

The work now under way at the Chateaugay mines will call for the expenditure of about \$375,000.

#### The Arnold Mining Company.

Returning to the main line of the Delaware & Hudson Railroad the party took the branch line which leads to the mines and plant of the Arnold Mining Company, which is operated by Pilling & Crane of Philadelphia, the Reading Iron Company, Reading, Pa., having a considerable interest in the undertaking. After a very thorough exploration of the property by diamond drilling a modern equipment has been provided capable of handling 600 tons of crude ore in two ten-hour shifts. The power plant consists of three Heine boilers, equipped with the Sturtevant system, and of a two-stage Rand compressor. The magnetic concentrating mill has a rock breaker, a set of Edison rolls, a dryer, a preliminary cobbing machine, followed by two sets of rolls and two magnetic separating machines.

One of the difficulties experienced in conducting the operations has been the scarcity of good labor, from which isolated workings in that part of the country seem to suffer. As an inducement for a better class of men the company is erecting a number of houses and in the construction of these is using cement very largely. The concentrating mill tailings are an especially valuable product for this, since the grains are sharp. Both at Chateaugay and at Arnold they are extensively used for this purpose. The houses for which blocks are molded cost about as much as, or a little more than, frame buildings, while in appearance they are much more attractive and certainly hold out the promise of a much longer life.

By nightfall the party had again reached the Champlain Hotel, and after a brief evening session the members of the Eastern Pig Iron Association returned to their homes.

#### Drawback on Corundum Wheels.

WASHINGTON, D. C., October 3, 1905.—The Treasury Department has prepared a series of regulations for the allowance of drawback of duty paid on imported corundum used in the manufacture of corundum wheels and other articles for abrasive purposes. The regulations, which have been prepared upon the application of the Cortland Corundum Wheel Company, Cortland, N. Y., provide that the drawback entry must show the total net weight of the corundum wheels and other articles containing no lead, the total net weight of corundum wheels containing lead as bushings, and the total quantity of corundum contained therein. In the liquidation the net weight of corundum in condition as imported which may be taken as the basis for the allowance of drawback may equal the net weight declared in the drawback entry after official verification of exported quantities, provided that in no case shall it exceed 88 per cent. of the net weight of the corundum wheels containing lead bushings and 91 per cent. of the corundum wheels and other articles containing no lead.

W. L. C.

The United States battle ship Mississippi was launched on September 30 at the plant of the Wm. Cramp Ship & Engine Building Company, Philadelphia, Pa.

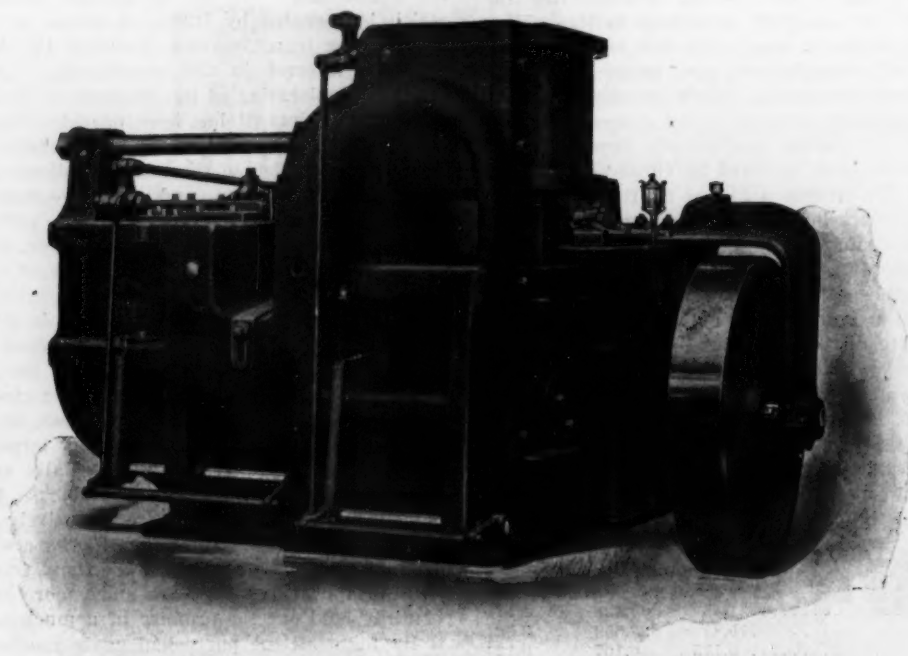
### The New Ajax Universal Forging Machine.

A departure in forging machinery has been made by the Ajax Mfg. Company, Cleveland, Ohio, in the new universal forging machine invented by J. R. Blakeslee, Jr., general manager of the company. It retains all of the features of the Ajax heading, upsetting and forging machine and has, in addition, a powerful vertical press which can be used for forging, bending and trimming. This press has a vertical movement of from 3 to 5 inches, according to the size of the machine. There is a screw adjustment to the stroke of the head, by which it may be brought to the required point to facilitate the setting of the dies. This screw is accessible from all sides of the machine.

The vertical movement of the head is obtained by heavy links connected at their lower ends with levers having eccentric hubs which determine the throw and the length of stroke. These levers are in turn connected to a horizontal slide, actuated by an eccentric shaft in the rear end of the machine. The mechanism that

stated to be a very intelligent man who appears to know a great deal of the details of the business of that firm. He makes a good impression upon those he meets and has succeeded in several instances in securing financial advances. He appears to bestow his favors particularly upon those who are doing an export trade. He is described as a man of about 160 pounds in weight, with smooth face and sandy hair and is about 34 years of age. We are informed that he does not confine his work entirely to the machinery trade, but touches almost any line which does a large export business.

**Acheson Graphite.**—The International Acheson Graphite Company, Niagara Falls, N. Y., with the recent completion of a large extension, equipped with the most modern electrical and mechanical appliances and machinery, has doubled the capacity of its plant for creating graphite in the electric furnace and has closed a contract with the Niagara Falls Power Company for another 1000 horse-power of electrical energy in addition to the 1000 horse-power previously used. The com-



A New Universal Forging Machine, Built by the Ajax Mfg. Company, Cleveland, Ohio.

operates the vertical forging press is entirely independent of that operating the forging machine, although both are in the one bed.

The forging press is brought into action by depressing the pedal shown at the right of the machine in the illustration. This causes the lock between the eccentric shaft and the header slide to drop into place. One or more blows may be given, or until the foot is removed from the pedal, when the lock is released automatically and the forging press comes to rest with the dies wide open. This locking device is identical to that employed on the Ajax heading, upsetting and forging machine.

The machines are built in seven sizes, ranging in weight from 18,000 to 180,000 pounds. The bed is of box form and is cast in one piece of strong, close grained iron, having ample strength to withstand the strains incident to its operation. This machine, it is believed, will open up a new field for forging work, as by its use many forgings can be made at a lower price than formerly, through the saving of heats and handling, and many intricate forgings, heretofore impossible to make on forging machines, it is claimed, can be readily turned out by this tool.

Machinery manufacturers should guard against the work of an impostor who claims to be connected with Fenwick Freres & Co., Paris, France. The individual is

mercial importance of this artificial graphite may be estimated from the fact that the United States geological report for 1904 states that for that year the value of Acheson graphite produced was \$217,790, while all the graphite mined in this country amounted merely to \$341,372. New York State, which is considered rich in deposits, according to the official report of 1904, produced natural graphite worth \$119,500. Acheson graphite is largely used in the manufacture of metal protective paints, dry batteries, stove polish, packing and as a lubricant. The electrochemical processes also consume an extensive supply.

A newly invented German typewriter, not yet upon the market, prints syllables and short words instead of only single letters. It is said to be remarkably rapid. With a language as complex as English it seems doubtful if such a device could be made practicable, unless it were to have a wholly prohibitive number of characters.

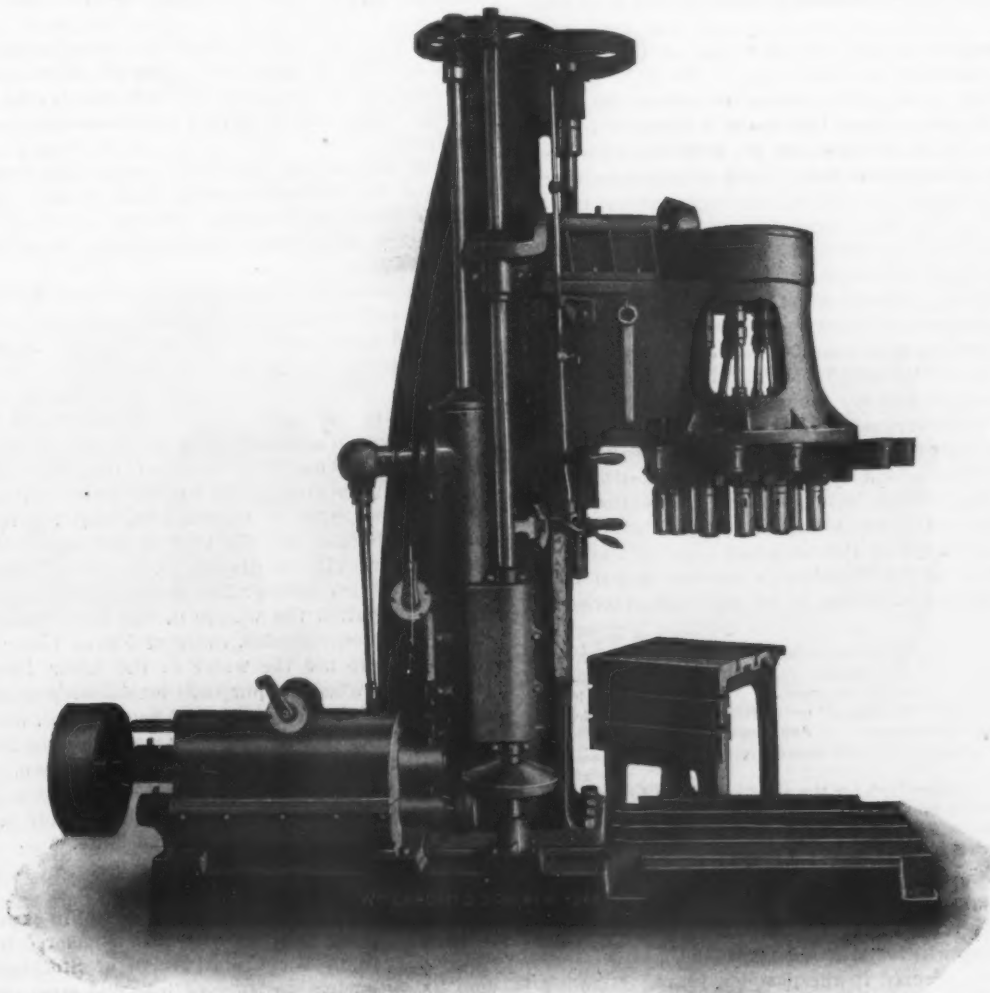
The meetings of the New York branch of the Associated Foundry Foremen have been resumed for the winter, the first meeting occurring on Saturday evening, September 30, at Franklin Hall, corner Warren and Montgomery streets, Jersey City. S. M. Williams, Elizabeth, N. J., is secretary.

### The Gardam Multiple Spindle Drill.

The adjustable multiple spindle drill designed by William Gardam & Son, New York, is adapted for drilling a number of holes of large diameter in any relation to one another, either in a square, circle, or irregularly disposed. A constant speed belt drive furnishes four speeds to the drills through a speed changing box located on the base behind and at one side of the column. The lever shown at the top of this box actuates a rack rod which effects the change of gear combination. For each change of drilling speed there are three changes of drill-

slotted arms, one spindle being provided with a long arm to drill at the center of the head. The thrust of drilling is taken by ball bearing thrust collars on each of the spindles and similar collars are provided on the feed and vertical driving shaft. With the exception of the gears at the top of the column all gears are incased. A box table or angle block finished on the top and side and having numerous T-slots to hold the work is usually furnished with the machine.

The design of the machine places most of the weight near the base, which has the effect of increasing the strength and reducing vibration, which is an assistance



Adjustable Multiple Spindle Drill. Made by Wm. Gardam & Son, New York.

ing feed, positively gear driven through the box, on the vertical driving shaft. These gear changes are manipulated from the small handle behind the lower vertical gear box. The other case contains the gears used in the quick return of the spindle head in backing out drills and for quickly bringing it to any required position. The drive is taken directly from the constant speed shaft in the main driving box through the angle drive shown. This gives an independent quick rise and fall of the head.

The operation of the tools is entirely automatic from the time the drills start to work. A latch lever close to the operator's hand is set when starting the feed and is automatically tripped when the drills break through the metal. This causes the quick return to operate and the head is raised to a predetermined height above the work, when the latch is again tripped and the head is brought to rest. The machine is then in condition to have a new piece of work substituted.

The spindles have bronze bushings with 1 inch of vertical adjustment to each to compensate for different lengths of drills, and are adjustable horizontally in

to accuracy in drilling. The following are the principal dimensions:

Number of spindles.....	4 to 16
Maximum size of drilling circle, inches.....	18
Greatest distance between end of spindle and base plate, inches.....	50
Least distance between end of spindle and base plate, inches.....	18
Distance from column to center of head, inches.....	20
Height over all, inches.....	102

The machine can also be supplied with a four-step cone pulley in place of the all gear drive. The rates of feed may be increased or decreased by changing the train of gears from the vertical main shaft to the first feed drive.

Ernesto Stassano of Rome, Italy, has been granted a patent in the United States on a revolving electric furnace. The inventor is thus covering by American patents the furnace with which his name has been connected for some time. In general the patent covers a rotating electric furnace with two electrodes inclosed with double walled carbon holder casings in which cold water circulates continuously.



## Mexican Railroad and Trade Notes.

DURANGO, September 27, 1905.—In his address to Congress, which reassembled on the evening of September 16, Mexico's Independence Day, President Diaz, according to custom, made an extended review of the country's material development and industrial advance as well as of the work of the legislative departments of the Government. He referred at some length to the improvements now under way at the various seaports, both in the construction of works and in the steps being taken for their better sanitary protection. Good progress is shown to have been made in the work of constructing jetties, wharves and warehouse accommodation at Coatzacoalcas, while at Manzanillo and Salina Cruz work upon the new breakwater and the dredging of the harbors have proceeded with much activity.

During the half year January 1 to June 30 there were granted 1608 mining title deeds. Deposits of zinc in the States of Nuevo Leon and San Luis Potosi were a new feature of interest to those engaged in this industry. Within the same period 453 patents of invention and 20 patents for models and industrial designs were issued and 319 trademarks registered.

The President comments upon the many concessions given for utilizing the waters of the different rivers and lakes for irrigating purposes, and makes a significant intimation and one which cannot fail to give great satisfaction to the entire people, seeing that the action indicated is so necessary for the country's permanent prosperity. "The Government," says the Chief Executive, "is giving serious attention to the problem of irrigation on a large scale throughout the country, without which the progress of agriculture is impossible." More than once the pressing necessity for Government action in this direction has been voiced in these reports.

The portion of the President's address which deals with the railroad situation is of sufficient interest to quote:

The additions to the railroad system of the Republic have aggregated 236 km., the largest contributions being those of the railroad from Carpio to Temosachic, completed with a length of 87 km.; the line from Chihuahua to Ojinaga, 60 km.; the line from Linares to the Mineral of San Jose, 35 km., and the Atlamajac line, 10 km. The total aggregate length of the railroads is 16,866 km.

There will be submitted for the sanction of the Legislature a contract entered into for the construction of a railroad uniting the States of Sonora, Sinaloa, Jalisco and the Territory of Tepic with the railroad system of the country.

A gratifying increase in the total of the revenue for the past fiscal year is noted, the President remarking that the difference between revenue and expenditure will leave a surplus which "will not prove the least of those that have been secured in the past ten years."

### Railroad Concessions and Construction.

Application has been made to the State Government of Jalisco by H. C. Miller for a special concession for a line of standard gauge railroad from the city of Guadalajara to Chamela, on the Pacific Coast.

Carrigan & Lawson have a contract for the construction of a 12-km. branch line from Sabinas, Coahuila, on the Mexican International, to Agujito, where there are coal mines.

One year additional time from November 6 next has been allowed to Alfred Strobel for the commencement of construction work upon a line between Agostillan and a point on the Mexican National in the State of Michoacan, for which he obtained a concession some time ago.

According to statements made by A. J. Peyton, who holds a concession for a railroad between Irapuato and Tacambaro, Michoacan, work upon its construction will commence soon. With the subsidy of \$3000 per kilometer given by the State of Michoacan it is asserted that sufficient money is behind the undertaking to assure its successful completion.

### Industrial Notes.

If present plans are carried out a large power plant will be erected near Toluca, the capital of the State of Mexico, by the Mexican-American Power Company, a New Jersey corporation, capitalized at \$10,000,000, of

which \$1,500,000 has been paid in. Capitalists of Pennsylvania are interested in the company, of which Joel H. De Victor is president and Wm. McKenzie vice-president. The company purposes entering into competition in the field of supplying light and power to the City of Mexico and will, it is said, erect a first plant at Toluca and later others at other points, using aluminum cables for transmission of power.

The Mexican Car & Foundry Company of the City of Mexico has received its first large order for rolling stock, it being from the Mexican National Railway Company for the International adjunct of the merger, and is for 175 coal cars of 80,000 pounds capacity, the sum involved in the contract being \$250,000, Mexican currency.

The Mexican Central Railway Company is converting a number of locomotives into oil burners, it being the intention to use petroleum instead of coal for fuel. Storage tanks will be placed at convenient places upon the lines.

Four locomotives have been ordered by the Government for the railroad between Vigla, Chilco, and Santa Cruz de Bravo, in Yucatan. This is a military road in the country of the Maya Indians, who were subdued a few years ago.

Application for water rights have been made, for the purposes indicated, by the following: Andres Lefebre, to use 80,000 liters per second from the River Agua Salada at Xicotlacotia, in the State of Morelos, for the generation of electric power; Vincente Martinez, to utilize for irrigation the waters of the River Escondido, in the State of Coahuila; Marcelino Garza of Ramos Arispe, in the same State, to use the waters of the River Patos for irrigation; Luis Arroyo, to use the waters of the River Laja, in the State of Guanajuato, also for irrigation; George G. Bergman of the City of Mexico, to utilize the waters of the River Blanco, canton of Cordoba, Vera Cruz, for electric power; Emanuel and Daniel Lozano, to use for irrigation the waters of the River Loma Prieto, district of Montemorelos, State of Nuevo Leon; José M. Montecinos, to use the water of the River Jaumave, in Tamaulipas, where he purposes establishing a system for the benefit of himself and other hacendados, near Monte Redondo; Diego Redo, to use for motive power the waters of the Tamazula River, district of Culiacan, State of Sinaloa, and Ignacio Saldana desires to erect a plant for the generation of electric energy and asks for permission to utilize the waters of the Rio del Salto. J. J. D.

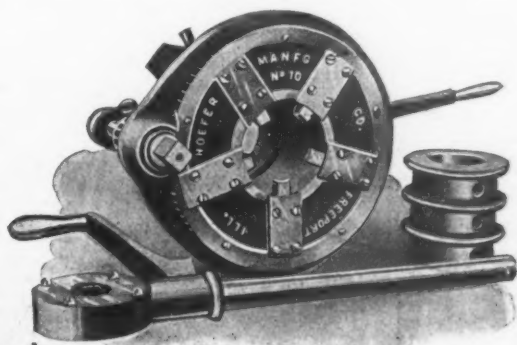
**Sweden's Iron and Steel Output in 1904.**—The American Iron and Steel Association has received from General Director Richard Akerman of Stockholm, Sweden, the following statistics of iron and steel production in Sweden in 1904 in metric tons: Iron ore, 4,084,647; pig iron, 528,525; blooms from pig iron in charcoal hearths, 189,246; Bessemer ingots and castings, 78,577; open hearth ingots and castings, 252,832; crucible ingots and castings, 1162; blister steel, 951; bar iron and steel, 181,775; nail and wire rods, band iron and steel, 102,976; otherwise shaped iron and steel in bars, 9020; plates (not including sheets), 16,331; tube blocks, hollow blooms and billets, 23,594. The number of blast furnaces active in 1904 was 133, and the average daily production per furnace was 15.1 metric tons. As compared with 1903 the above figures show an increase in the production of iron ore of 406,806 metric tons, in pig iron of 21,700 tons and in open hearth steel ingots and castings of 19,954 tons. Bessemer steel ingots and castings show a decrease of 5652 tons.

In wire drawing, because the wear upon the hardest steel dies precludes the possibility of a uniform wire diameter from beginning to end of the drawing, diamonds are now extensively used for dies, especially for small wire up to about 1-40 inch in diameter. The diamonds used for this work weigh from four to five carats each and cost about \$15 or \$20 per carat. With these dies it is said to be quite practicable to draw platinum wire down to a diameter of 0.0005 inch.

### The Hoefer Pipe Threading Machine.

A new adjustable hand power pipe threading machine has just been brought out by the Hoefer Mfg. Company, Freeport, Ill. The machine is capable of threading pipe of any material in which it is regularly made. It cuts a standard tapered thread, the taper being effected by the slight withdrawing of the dies as they feed forward, thereby increasing the diameter of the thread. The operator does not have to force the dies on the work. They are fed forward automatically, being mounted in a gear, which is drawn in an advancing direction by a threaded sleeve having a thread of the same lead as that of the dies. The thread is cut clean and to a proper taper, so that the pipe will make up with a perfectly fitted joint and is left strongest where the thread terminates.

A distinctive feature of the machine is the provision of means for quickly adjusting the dies so that they will cut either slightly over or under the standard size. Another unique feature and one that is very desirable is that a given size of machine requires but one set of dies (five in a set) to cut the threads within its capacity; consequently much time is saved that would otherwise be lost in substituting a new set of dies to cut another size of pipe. The dies are arranged with a projection which in-



The Hoefer Adjustable Hand Power Pipe Threading Machine.

sure the correct centering of the pipe, and as the dies are not taken out of the machine they cannot be lost.

The machine may be operated easily by one man, as a powerful leverage is obtained and the friction is comparatively small, making only a moderate amount of labor necessary. The machine is of simple construction and although light is claimed to be very strong. It is described as having no complicated parts to get out of order, and the moving parts are so protected that they will not become clogged with dirt or chips. The dies may be readily sharpened by grinding their faces. They are all numbered in their proper order and any number can be duplicated.

**The McCune Steel Railroad Tie.**—In the description of this device printed in *The Iron Age*, September 28, there were two slight errors. The steel tie does not belong to the Jones & Laughlin Steel Company but to Frank McCune, general superintendent of the Monongahela Connecting Railroad Company, owned by the first named company, and the McCune ties now in use on the lines of this railroad were made at the shops of the Monongahela Connecting Railroad Company and not by the Jones & Laughlin Steel Company, as stated.

The thirty-third annual meeting of the American Gas Light Association will be held at Milwaukee, Wis., October 18 to 20. Indications point to a large attendance of officers and managers of gas companies and well-known engineers. A feature of one afternoon will be a visit to the new plant of the Milwaukee Gas Light Company, which is considered one of the largest and most complete in the world. The list of papers to be read at the meeting is as follows: "Condensation," by Jas. S. McIlhenny, Washington, D. C.; "Taxation of Gas Companies," by Geo. McLean, Dubuque, Iowa; "High Pressure Distribu-

tion to Date," by H. L. Rice, Aurora, Ill.; "Methods of Charging for Gas," by A. E. Forstall, New York; "Improvements to Date in Consumers' Meters," by Chas. H. Dickey, Baltimore, Md.; "Municipal Ownership," by B. F. Lyons, St. Louis, Mo.; "Relativity of Economic Institutions," by Prof. B. H. Meyer of Wisconsin University.

### Central American Notes.

ST. TOMÁS, CENTRAL AMERICA, September 18, 1905.—The Pacific ports of Mazatlan, Topolobampo and Guaymas will be lively places for business with the building of the new coast railroad southward to Guadalajara and Colima. One-third of this road is already in operation and much of the building material—rails, bridges, &c.—will come into the country by Manzanillo and Mazatlan. But few of the natural resources in this immense section have been touched. Copper, gold, silver, tin and iron have been worked more or less, and the one difficulty in mining will now be overcome, that of transportation, every facility being offered by the new line.

Much good will be done by the investigations going on in the rubber, fruit and other American enterprises in these tropical regions, as the honest concerns will deservedly thrive all the more when the other kind is weeded out. There are vast chances for American capital in these new countries, but care must be taken in selecting.

Peru's Congress is to investigate the workings of the Equitable, New York Life and other American insurance companies operating in that country.

Chile, Mexico and Argentina are endeavoring to manufacture agricultural and mining machinery at home. They have the mines and they claim that they can produce good iron and steel at half the price, unless reciprocity treaties with the United States make it worth their while to continue importing.

Progress is being made on the Quito Railroad and on the Peruvian lines now building, and the American contractors are usually paid promptly by the Government.

Although business would seem to have little to do with sanitation, there is no doubt that since the commissioners have taken hold of Panama the health of the people is much better and activity is shown on all hands. Material of all kinds is coming in fast and even the food supply is bettering, due to importations from Nicaragua, Costa Rica and Honduras.

For many reasons it is to be hoped that our Government will energetically probe the Albers case in the Ocotul mining region of Nicaragua. At the same time that we treat all these people fairly we must make them feel that our flag protects us from aggression. Otherwise, honest Americans cannot do business in many of these countries, where the officials are often a law unto themselves.

The German company which now owns the railroad running from the ports of Ocos and Champerico has begun the building of new steel piers at both places. The one at Champerico is to be 75 or 100 feet longer than the one recently washed away by a tidal wave.

The coffee crop of Central America will be nearly a third larger than that of last year. Fruit production has also considerably increased on the Atlantic Coast, several American enterprises having started up at Omoa, Galfe and on the Ulua. In fact, a colony of Americans is extending all the way from Belize to Panama, and at least two lines of steamers will help the development of this region in a few months.

Once the Inter-oceanic of Honduras is completed to Yoro there will be a large export of copper and iron from this rich mining section. Many of the present owners are Americans and some of them are backed by Cleveland and Pittsburgh capital.

C.

The production of gold in the United States is shown by reports of the Director of the Mint to have increased from \$32,800,000 in 1889 to \$39,500,000 in 1894, \$71,053,000 in 1899 and \$84,550,000 in 1904. These figures are exclusive of Alaska. Were the Klondike and Nome districts included the figures for 1904 would be \$99,730,000.



## Electric Cranes of German Make.

The Gesellschaft für Elektrische Industrie, Karlsruhe, Germany, has lately made a specialty of building hoists and traveling and dock cranes. Three and four motor cranes are built. In the first one motor is used for raising and lowering, one for the trolley traveling and one for the bridge traveling. The movements are independent or two or three can be effected simultaneously. In the four-motor cranes there are two motors for hoisting, one for heavy loads and one for light loads, which can be raised with greater speed. The company makes all parts that enter into the cranes, including motors, controllers, gearing, hoisting drums and steel frame work.

The cranes are ordinarily fitted with direct current motors having water tight or dust tight cases, but three-phase motors may also be used. The three main movements are controlled by three reversing controllers, or a universal crane controller, by which two movements of the crane are directed with one handle. The zero position of the handle is its horizontal one; when moved upward the load is raised; if turned to the right or left the load follows the same direction, and if a circle be described by the handle the load follows a circular movement. This controller resembles an ordinary railroad controller, except that it has two cylinders, which

length of the jib arm is 18 feet. The crane is designed to carry a load of 15 tons. The lifting speed with a load of 10 tons is 15 feet per minute and with 3 tons 53 feet per minute.

A crane of this type combines and takes the place of the scaffolding usually required and the hoisting apparatus and does its work quicker and cheaper. It is operated by three electric motors, one being used for traveling the crane on the rails, another for revolving the jib and the third for raising or lowering the load. It is a type that is particularly serviceable on docks, being designed to handle heavy loads and to resist high wind pressures. It may be operated on grades as great as 4 per cent. and is very stable in spite of the small gauge of the track. A new crane of the tower type is now being built which will be about 120 feet high.

## Lake Superior Mining Matters.

DULUTH MINN., September 30, 1905.—Statements from Cleveland that shipments for September would foot up to 5,000,000 tons are too high. The Minnesota roads will hardly get above 2,750,000 tons, and the old ranges, though they are shipping strongly, will be 1,000,000 tons less. To October 1 the total ore business of the year will be about 25,000,000 gross tons. This is

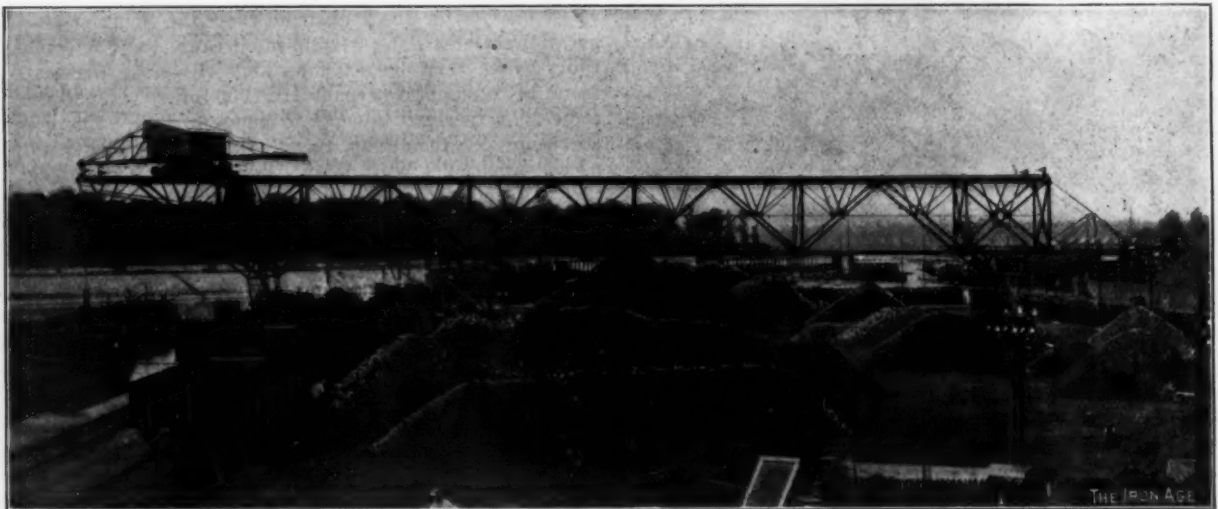


Fig. 1.—Coal Unloading Bridge at the Karlsruhe Harbor, Germany, Built by the Gesellschaft für Elektrische Industrie.

through gears may be turned by the handle independently or both at the same time. In some cases the third movement is controlled by an added third cylinder actuated by a separate small handle. In general, however, a special reversing controller suffices for the third movement.

All the motors are provided with automatic magnetic brakes, which stop the motor instantly when the current is cut off. For small cranes working at high speed worm gearing is used, the steel worms being cut from the solid, tempered and ground. The worm wheels are phosphor bronze and are provided with ball bearings and ring lubrication. Large cranes are fitted with rawhide gearing and all parts that are frequently in action are cast steel. Either chains or steel ropes are used on the hoists. The hook of the crane has ball bearings, so that the chain or rope cannot get twisted.

The accompanying Fig. 1 shows a general view of a traveling coal unloading bridge at the harbor of Karlsruhe, which will be seen to be not unlike equipment for coal and ore handling built and used in this country. Fig. 2 shows an interesting electrically operated tower crane. Both were constructed by the German company.

The tower crane shown is in operation in Brussels, where it is used in building construction for handling large blocks of stone from the cars to their permanent locations in the building. The crane runs upon a track several hundred feet long, with a 12-foot gauge. The extreme height of the crane is 75½ feet, the total height to which the hook may be raised is 71½ feet and the

more than double the record of last year to the same date, and 3,177,000 tons ahead of the business of that year completed. It is within 2,500,000 tons of 1902, the greatest full year the trade has ever known. There yet remain October and November, and probably a few days of December, in which shipments can be driven at high rate, but these months will not show as high a total as September. It will be easy, so far as the question of transportation is concerned, to close the year with a business considerably in excess of 30,000,000 tons. If the furnaces that are still short of ore for the winter could get in connection with the mines that are well up to or ahead of their schedules of shipment a considerable buying movement would doubtless set in at once, this to be followed by increased shipments. But, unfortunately, the mines that are in position to increase their output are not usually those that are selling ore to the general consumer. While one crowd has time to spare at the end of the season the other is anxiously looking for supplies of ore to maintain itself till the advent of a new shipping season, and is vehemently promising itself not to be caught that way again.

## Making Shipping Records.

The Marquette and Gogebic ranges are making a very heavy record. In the mine yards at Ishpeming alone there are from 15 to 18 switching crews constantly employed. This number is in excess of any preceding year. The Gogebic is very active, and from west of the Mont-



real River to the shores of Sunday Lake every active mine has increased its business. The range is looking exceptionally well this year, with its idle mines revived and re-explored, its big mines opened deeper, its new discoveries at lower levels, its great new footwall shafts and enormous power plants, and it seems to have a longer life than has ever been expected or admitted.

Among big Mesaba range mines there will be more 1,000,000-ton shippers than ever before. The Biwabik is entering the list for the first time, while the Fayal, Adams, Mountain, Burt, Mahoning and Stevenson are also above 1,000,000 tons each, some of them far above it. Fayal will not ship as heavily as last year, while Stevenson is about the same and Mahoning is higher than be-

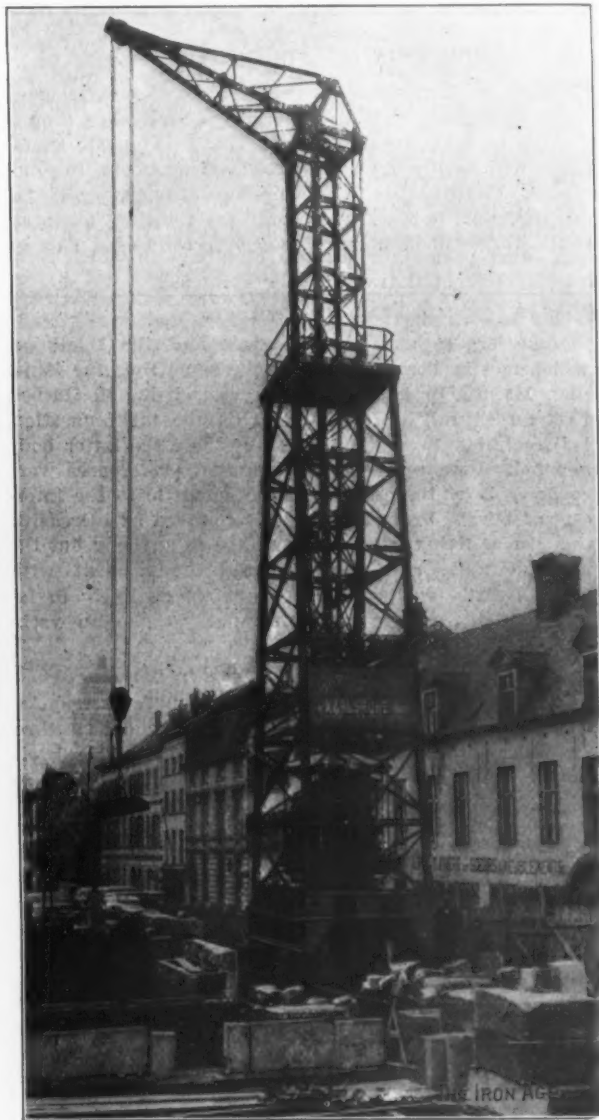


Fig. 2.—A Novel Tower Crane Used in Building Construction, Made by the Same Company.

fore. On the old ranges there will be Norrie and Chapin.

At Fayal and Adams mines 11 steam shovels are working now. At the Fayal three shafts are loading cars day and night, and two shovels are working day and night, one in stocked ore and one in No. 3 pit. This mine has four steam shovels stripping day and night, and an immense amount of surface is going off. At Adams ore is being hoisted from six shafts, four of them day and night. Three steam shovels are loading stock piles at the mine. This mine has two steam shovels stripping the new open pit, so there are 11 shovels and 9 shafts working at the two properties, making an enormous tonnage. The six shovels stripping are moving about 30,000 yards per day, while ore goes forward at the rate of better than 60,000 tons per week. Another mine on the eastern Mesaba that is making a record this year is Stephens, which has recently been mining at the rate of

8000 tons a day. This is its first year of large operation, and while its total for the season will fall far short of 1,000,000 tons, it is quite likely to reach that amount soon, and might easily do so now if it was desired to ship so much from a mine whose royalty and minimum are both light.

#### Notes.

Trammers at the Richmond mine, Cascade range, have struck for an advance to \$2 per day, and refused to compromise on \$1.90. The mine is idle in consequence. In the same locality the Volunteer has ceased shipments and the district is quiet. It is not probable that the Richmond will get out much more ore this season. The Oliver Company's Moore is not shipping, but is stripping with a small force.

At Negaunee the Queen group and Hartford mines are to install a complete electric tramping system to consist probably of about four locomotives and a 100-kw. generator, though the details have not yet been settled and may not be for some little time. Another electric tramping system of importance that is to go in shortly, but the details of which are not definite, is at the Fayal, on the Mesaba range. This is likely to be of about the same size and character as that of the Queen. The electrification of these Lake Superior iron mines is coming along with greater and greater speed now that it has fairly begun.

Shipments for the year from the Lake Superior Corporation's Helen mine, Michipicoten range, will be something better than 100,000 tons and will bring the total from the mine up to perhaps 1,025,000 tons. This is more than many persons thought it could produce. There is still some ore remaining, though the mine is said not to be widening much with depth. But it would appear that the shipment of 1,000,000 tons was enough, together with what other business might be hoped for, to justify the opening of the mine and the construction of 12 miles of railroad.

Some drill exploration is under way in section 18-57-13, which is about 10 miles south of the nearest Mesaba range operation. The country is full of float, probably off the Mesaba, with some wash of soft ore and some lean ore showing, and it is probably these that have led explorers there. It is another delusion similar to that of the so-called Highland range, and like the many that are constantly cropping out in daily papers throughout the State, in all of which the wildest and most impossible claims and statements are coolly made.

#### The Lake Superior Mining Institute.

This is the text of a circular issued by the secretary of the Lake Superior Mining Institute this week:

The following is a general outline of the programme for the Menominee range meeting, October 17, subject to change by the committee in charge:

Tuesday.—To visit the Chapin and Pewabic mines in the forenoon, leaving at noon for Crystal Falls, where the mines will be visited during the afternoon. The evening meeting will be held at Crystal Falls.

Wednesday.—Visiting mines and points of interest around Sturgeon Falls and Vulcan. Evening meeting will be at Iron Mountain.

(At Sturgeon Falls the Penn Iron Mining Company is about to install a large electric generating plant for operating its mines.)

Thursday.—Excursion to Escanaba, to various points of interest, after which a trip to Gladstone is planned.

(At Escanaba are the shipping piers of the Chicago & Northwestern Railroad and the central ore crusher of the Oliver Iron Mining Company, and at Gladstone is the large charcoal furnace of the Cleveland Cliffs Iron Company.)

In order to enable the committee to arrange ample accommodation for all it is necessary that it be advised as early as possible of the number who will attend. Further information as to rates from the various points will be furnished members as soon as possible, also list of papers to be read at the meetings.

D. E. W.

The Ingersoll-Rand Company, 11 Broadway, New York, announces the establishment of a branch office at Houghton, Mich., under the management of T. F. Lynch, who has for several years represented the Ingersoll-Sergeant Drill Company in the copper and iron districts of the North. At the new office a complete stock of repair and duplicate parts for all Ingersoll-Rand machinery will be carried, assuring the most ready service to patrons of the company in the territory covered.

## Shaping Canada's Tariff.

### Manitoba Sentiment.

TORONTO, September 30, 1905.—In Manitoba the Tariff Commission found sentiment rather languid on the subject of its inquiries. It was thought there would be a large volume of earnest representatives in favor of lower duties. From the farmers, who would naturally seem to have most at stake on the tariff policy of the country, very little was heard. One explanation of their apparent indifference is that they were too busy with their harvests to bother with the commission. There will be further hearings at Winnipeg, when possibly the agricultural interest will be more demonstrative than it was at the time of the first sitting. It may be, too, that the farmers of Manitoba have come to share an opinion that was in some measure adopted by the farmers of Ontario twenty-five years ago—namely, that it is a good thing for agriculture that other industries should flourish in the same community. Manitoba farmers are benefitting by the flour mills established in the West and are better served by the branch works, which concerns like the Kemp Mfg. Company, Toronto, have started there. Account is to be taken also of the fact that imports from the United States into the West vary in such a way as to indicate that the consumers have a real influence over the price. American imports are large at given moments because they are cheaper than Canadian goods, and at other moments the balance will go to the Canadian side because the greater cheapness lies there. Of late Canadian manufactures appear to have the best of it in the West. The antidumping duty, the shifting of the demand for American goods to American branches now established in Canada, the activity of home trade in the United States and the venturing out upon the credit basis in Canada, are all factors in the change. To dwell on the last-named point first, it is to be said that the farmers of Western Canada used the proceeds of their last two or three crops rather unwisely in land speculation instead of applying it to the payments of debts in the East or to the cash purchase of agricultural outfit and home comforts. To trade on credit it has been necessary to trade at home, however prices might rule. But this year the farmers will be able to liquidate the indebtedness, and the Eastern banks, loan companies, manufacturers and wholesalers are determined to collect arrears.

The commission heard some Winnipeg traders on the tariff. One of these was rather vehement in his attack on protection and on the traders of Eastern Canada. Hardware was one of the classes of merchandise on which protection was represented to be a hardship, as it enters so largely into the requirements of the general consumer. On the other hand, the stove manufacturers who have started works in the West want their industry more liberally assisted. Of farm implements the West imported from the United States as follows in 1904 and 1905, respectively:

	1904.	1905.
Thrashers and separators.....	\$291,774	\$165,908
Portable engines.....	485,598	420,543
Wind mills.....	33,914	39,939
Plows.....	299,820	258,706
Harvesters, self binding.....	746,894	357,550
Harrows.....	82,074	44,799
Seed drills.....	102,339	121,718
Horse rakes.....	173,044	35,161
Mowing machines.....	331,964	71,375
Binder twine.....	1,459,113	1,288,696
Totals.....	\$4,006,534	\$2,804,425

### In British Columbia.

In British Columbia the Tariff Commission heard the views of the mining and smelting interests. The chief concern at Nelson was apprehensive lest the Government should reduce the protection the lead industry now enjoys. Under the bounty and the new duties the production of lead has increased by 500 per cent. The Nelson deputation did not specify what duties should be substituted for the bounty, but the Rossland Board of Trade took up that point. It suggested that the duty be 1½¢. per pound on pig lead and 1½¢. on such products

as litharge, dry red lead and orange minerals. The commission was also asked to have the duty on explosives removed. Steel rails used in mining were also named for the free list.

### Manufacturers' Association.

At the annual meeting of the Canadian Manufacturers' Association in Quebec the tariff was dealt with. A special committee charged with the work handed in a report, which was taken as expressing the sense of the association. It was stated in the report that the coming revision is expected to produce a favorable effect on the industry of Canada. The committee also made acknowledgment of the fact that the antidumping duty has proved effective for restraining the slaughtering of prices of foreign goods in Canada. It was recommended that facilities be provided for the detection of goods from the Continent of Europe and elsewhere that are sent via Britain and thus are improperly entered at the preferential rates. The tariff resolution of 1902 was reaffirmed, which demands "the immediate and thorough revision of the tariff upon lines which will more effectually transfer to the workshops of our Dominion the manufacture of many of the goods which we now import from other countries," but also should "give a substantial preference to the mother country and also to any other part of the British Empire with which reciprocal preferential trade can be arranged."

### Labor's Attitude.

The Trades and Labor Congress of the Dominion, which met in Toronto at about the same time the Canadian Manufacturers' Association was sitting in Quebec, took an entirely different stand on the tariff question. Its resolutions were the reverse of those the latter body adopted. Both protection and mutual preferences were condemned by the congress as antagonistic to the interests of labor. Protection was disapproved as increasing the cost of living without advantage to anybody but the manufacturers, and a preferential arrangement with Great Britain was pronounced against as likely to injure British workmen and by sympathy Canadian workmen.

### Sir Wilfrid Laurier's Remarks.

At the banquet of the Canadian Manufacturers' Association September 20, which closed the annual meeting, Sir Wilfrid Laurier was one of the speakers. He dwelt on the expansion of Canada and pointed out that so rich a country must soon have a population of 20,000,000 people. Before two years are past, he predicted, the immigrants will number 300,000 per annum. This new population, he said, will require everything used by civilized man. Proceeding, he said: "They will require clothes, they will require furniture, they will require implements, shoes and everything that man has to be supplied with. It is your mission, it is my mission also, that this scientific tariff of ours shall make it possible that every shoe worn in these provinces shall be a Canadian shoe, that every yard of cloth shall be made in Canada, and so on."

C. A. C. J.

**Bonuses for an Australian Iron Industry.**—A bill known as the "Iron Bonus bill" has been introduced in the Australian House of Representatives by the Minister of Trade and Customs. The bounties are under three classes. The total amount proposed to be paid for the first class is £250,000, the bonus to expire on January 1, 1911; for the second class, £50,000, up to January 1, 1909, and for the third class, £4000, up to July 1, 1907. The amount proposed is 12 shillings per ton on pig iron made from Australian ore, puddled bar iron made from Australian pig iron and steel made from Australian pig iron; 10 per cent. on value of galvanized iron, wire netting and iron and steel tubes or pipes (except riveted or cast) not more than 6 inches internal diameter, and £8 each on the first 500 reapers and binders. The person claiming any bounty is to give his bond to the Commonwealth in the aggregate amount of the bounty that he will pay the employees the highest wages usually paid in the State; that he will not sell any of the goods on which bounty is paid at a higher rate than that to be provided for and that



in case of a bounty on pig iron, puddled iron or steel he will transfer the land and plant to the State in which the goods are manufactured on fair compensation.

### Steel Concrete Pipe Experiments.

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In all of the reclamation projects it is most important that the structures on the main canals shall be of a permanent nature. The works have to be maintained for several years by the Reclamation Service before they are turned over to the people of the district. The works are to be paid for in ten annual installments, and at the end of ten years they should be in good repair and as sound and durable as when they were constructed. This condition is a difficult one to fulfill.

#### Steel Concrete More Durable.

There is little doubt that steel concrete is a much more durable material than either steel or wood, but at the very outset it presents a serious drawback. Many statements have been made as to the water proof qualities of certain mixtures for concrete, but water under pressure is a very searching agent, and it must be admitted that so far as these experiments have gone these statements have not been substantiated. To determine just how much pressure of water ordinary well made concrete would stand without leaking seriously and what mortars would most effectually stop leaking, and up to what pressure, these experiments were undertaken.

It was recognized that experiments with small pipes would not be of such practical value as those with pipes of sizes more nearly commensurate with the work in hand. It was finally decided to make seven or eight pipes, each 5 feet in diameter inside and 20 feet long, with a 6-inch thickness of concrete shell, inclosing an armor of steel rods sufficient to resist a head of 150 feet of water with a factor of safety of 4. The quantities of water to be carried in the different projects vary from 250 to 1500 second-feet, and this size seemed as small as it would be advisable to experiment with in order to show the practical difficulties of construction as well as the flaws and imperfections in the pipe when built from careless or defective workmanship.

Water under pressure tells the truth without fear or favor, and these experiments show that there are many practical difficulties to be overcome in the construction of steel concrete pipe that will stand 100 feet of head of water without appreciable leakage.

#### Conclusions.

After describing the experiments in detail Mr. Quinton states his conclusions, among which are the following:

Do not depend upon the tensile strength of the concrete, but make the steel rods of such size and distance apart as will insure no greater stretch of the steel than 0.04 inch in any rod from the maximum pressure to which the pipe is to be subjected.

Do not use steel concrete pipes for heads over 70 feet, except for short distances, where 100-foot head might be used by taking special precautions.

There can be no question that a steel pipe inside a concrete pipe would be tight, but it would be useless to put a lining of concrete inside of steel, as the concrete would certainly leak some, and the steel would be little better protected on the inside from the action of the water than if there were no concrete inside. It would,

however, be protected from scouring, and a ring of concrete outside the steel would protect the outside of the steel from the action of injurious salts, acids, &c. A better pipe, however, would be a wooden pipe with steel bands, which can be made perfectly continuous, smooth and true inside, with a ring of concrete placed around it after the wood is thoroughly saturated and leaks all closed up. This would be an expensive pipe, but it is believed that it would be as near an ideal pipe for a warm climate as could be made.

The question of the durability of the steel rods of large diameter, such as were used in these experiments, is yet an open one, as the time between placing these rods in the concrete and the breaking up of the pipes was too short to afford reliable data for drawing conclusions on this subject.

When the pipes were broken up none of the rods exhibited any appearance of rust, except one, where there was a large and long continued leak in the pipe, and that was a small spot of about 1½ inches in length all around the rod. The pipe in which this occurred was lined with a mortar mixed with sal-ammoniac and iron filings, and the presence of the sal-ammoniac would naturally account for the rust.

W. L. C.

### Electric Locomotives for the New York, New Haven & Hartford Railroad.

Plans are under way for the electrification of a part of the lines of the New York, New Haven & Hartford Railroad. It has been decided to use alternating current, and as the locomotives will be equipped with single phase motors that may be operated by direct current it will be possible for them to continue from Woodland over the New York Central tracks, which will be supplied with direct current. For a time the service will be confined to this section.

The reasons for adopting the alternating current system were that it has great flexibility, allows economical line construction, large radius of action from a single station, the elimination of rotary converter substations and electrolytic troubles and excellent speed control. An advantage of great practical importance is that an overhead trolley wire may be used in place of the dangerous, inconvenient and expensive third rail, as high voltage will be used and the correspondingly smaller current may be carried by comparatively small wires. The overhead construction is specially desirable at terminals where the multiplicity of tracks and switches complicates the troubles incident to the use of third rails.

A contract has been placed with the Westinghouse Electric & Mfg. Company, Pittsburgh, Pa., for 25 electric locomotives for high speed passenger service. Each will weigh approximately 78 tons and will be capable of maintaining a schedule speed of 26 miles per hour in local service with a 200-ton train making stops every 2.2 miles and reaching a maximum speed of 45 miles per hour between stations. In express service a speed of from 60 to 70 miles per hour can be maintained with a train weighing 250 tons. To handle heavier trains two or more locomotives will be coupled together and controlled from the forward cab. The multiple control system will make it possible for one engineer to operate several locomotives coupled together, in a manner similar to that on electrically operated elevated roads, where trains made up of many motor driven cars are controlled entirely from the forward car.

Each locomotive will be equipped with four Westinghouse single phase railway motors of the straight series gearless type and with the unit switch system of multiple control. The motors will be permanently connected, two in series. On direct current the pairs of motors will be operated in series parallel and on alternating current by voltage control. The motors will be spring supported and connected by flexible drive in such a way that all dead weight will be taken off the axles. On direct current each motor will be capable of developing a rated output of 400 horse-power.



## Shaping Canada's Tariff.

### Manitoba Sentiment.

TORONTO, September 30, 1905.—In Manitoba the Tariff Commission found sentiment rather languid on the subject of its inquiries. It was thought there would be a large volume of earnest representatives in favor of lower duties. From the farmers, who would naturally seem to have most at stake on the tariff policy of the country, very little was heard. One explanation of their apparent indifference is that they were too busy with their harvests to bother with the commission. There will be further hearings at Winnipeg, when possibly the agricultural interest will be more demonstrative than it was at the time of the first sitting. It may be, too, that the farmers of Manitoba have come to share an opinion that was in some measure adopted by the farmers of Ontario twenty-five years ago—namely, that it is a good thing for agriculture that other industries should flourish in the same community. Manitoba farmers are benefiting by the flour mills established in the West and are better served by the branch works, which concerns like the Kemp Mfg. Company, Toronto, have started there. Account is to be taken also of the fact that imports from the United States into the West vary in such a way as to indicate that the consumers have a real influence over the price. American imports are large at given moments because they are cheaper than Canadian goods, and at other moments the balance will go to the Canadian side because the greater cheapness lies there. Of late Canadian manufactures appear to have the best of it in the West. The antidumping duty, the shifting of the demand for American goods to American branches now established in Canada, the activity of home trade in the United States and the venturing out upon the credit basis in Canada, are all factors in the change. To dwell on the last-named point first, it is to be said that the farmers of Western Canada used the proceeds of their last two or three crops rather unwisely in land speculation instead of applying it to the payments of debts in the East or to the cash purchase of agricultural outfit and home comforts. To trade on credit it has been necessary to trade at home, however prices might rule. But this year the farmers will be able to liquidate the indebtedness, and the Eastern banks, loan companies, manufacturers and wholesalers are determined to collect arrears.

The commission heard some Winnipeg traders on the tariff. One of these was rather vehement in his attack on protection and on the traders of Eastern Canada. Hardware was one of the classes of merchandise on which protection was represented to be a hardship, as it enters so largely into the requirements of the general consumer. On the other hand, the stove manufacturers who have started works in the West want their industry more liberally assisted. Of farm implements the West imported from the United States as follows in 1904 and 1905, respectively:

	1904.	1905.
Thrashers and separators.....	\$291,774	\$165,908
Portable engines.....	485,598	420,543
Wind mills.....	33,914	39,939
Plows.....	299,820	258,706
Harvesters, self binding.....	746,894	357,550
Harrows.....	82,074	44,799
Seed drills.....	102,339	121,748
Horse rakes.....	173,044	35,161
Mowing machines.....	331,964	71,375
Binder twine.....	1,459,113	1,288,696
Totals.....	\$4,006,534	\$2,804,425

### In British Columbia.

In British Columbia the Tariff Commission heard the views of the mining and smelting interests. The chief concern at Nelson was apprehensive lest the Government should reduce the protection the lead industry now enjoys. Under the bounty and the new duties the production of lead has increased by 500 per cent. The Nelson deputation did not specify what duties should be substituted for the bounty, but the Rossland Board of Trade took up that point. It suggested that the duty be 1½¢. per pound on pig lead and 1½¢. on such products

as litharge, dry red lead and orange minerals. The commission was also asked to have the duty on explosives removed. Steel rails used in mining were also named for the free list.

### Manufacturers' Association.

At the annual meeting of the Canadian Manufacturers' Association in Quebec the tariff was dealt with. A special committee charged with the work handed in a report, which was taken as expressing the sense of the association. It was stated in the report that the coming revision is expected to produce a favorable effect on the industry of Canada. The committee also made acknowledgment of the fact that the antidumping duty has proved effective for restraining the slaughtering of prices of foreign goods in Canada. It was recommended that facilities be provided for the detection of goods from the Continent of Europe and elsewhere that are sent via Britain and thus are improperly entered at the preferential rates. The tariff resolution of 1902 was reaffirmed, which demands "the immediate and thorough revision of the tariff upon lines which will more effectually transfer to the workshops of our Dominion the manufacture of many of the goods which we now import from other countries," but also should "give a substantial preference to the mother country and also to any other part of the British Empire with which reciprocal preferential trade can be arranged."

### Labor's Attitude.

The Trades and Labor Congress of the Dominion, which met in Toronto at about the same time the Canadian Manufacturers' Association was sitting in Quebec, took an entirely different stand on the tariff question. Its resolutions were the reverse of those the latter body adopted. Both protection and mutual preferences were condemned by the congress as antagonistic to the interests of labor. Protection was disapproved as increasing the cost of living without advantage to anybody but the manufacturers, and a preferential arrangement with Great Britain was pronounced against as likely to injure British workmen and by sympathy Canadian workmen.

### Sir Wilfrid Laurier's Remarks.

At the banquet of the Canadian Manufacturers' Association September 20, which closed the annual meeting, Sir Wilfrid Laurier was one of the speakers. He dwelt on the expansion of Canada and pointed out that so rich a country must soon have a population of 20,000,000 people. Before two years are past, he predicted, the immigrants will number 300,000 per annum. This new population, he said, will require everything used by civilized man. Proceeding, he said: "They will require clothes, they will require furniture, they will require implements, shoes and everything that man has to be supplied with. It is your mission, it is my mission also, that this scientific tariff of ours shall make it possible that every shoe worn in these provinces shall be a Canadian shoe, that every yard of cloth shall be made in Canada, and so on."

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### Track Elevation in Chicago.

The report just published by John O'Neill, track elevation expert for the city of Chicago, covers the work for 1904 and gives a summary of the ordinances passed by the Chicago City Council and accepted by the railroads for the elevation of roadbed and tracks in the period from May 23, 1892, to April 6, 1905. The Council has passed 26 ordinances, which have been accepted by the railroads, and the yearly expenditure has been approximately \$2,250,000. All this is borne by the railroads. An estimate is made by the *Railroad Gazette* that the total cost of such work at Chicago when ordinances now contemplated shall be carried out will have been \$75,000,000. The summary of operations in the past 13 years is as follows:

Number of miles of main track to be elevated.....	153.23
Number of miles of all tracks to be elevated.....	746.33
Estimated cost of entire work when completed.....	\$48,910,250

### The American Unit Type Oil Filter.

For engines or other machinery requiring continuous lubrication with free flowing oil gravity oiling systems have very decided advantages. They make the process automatic and positive, and eliminate a large amount of labor as they require only very little attention. The Burt Mfg. Company, Akron, Ohio, furnishes an equipment which is styled the American oil filtering system. It comprises oil filters and an oil reservoir, and if desired an oil pump is included. It provides for the feeding of oil to the different bearings by gravity from an overhead reservoir, and after passing through the bearings the oil is piped to the filter in the basement, is purified and pumped back to the reservoir. The most important feature in the equipment is the filter, of which illustrations are herewith given.

Fig. 1 shows a broken view exposing the interior parts. The dirty oil enters the waste oil receptacle and

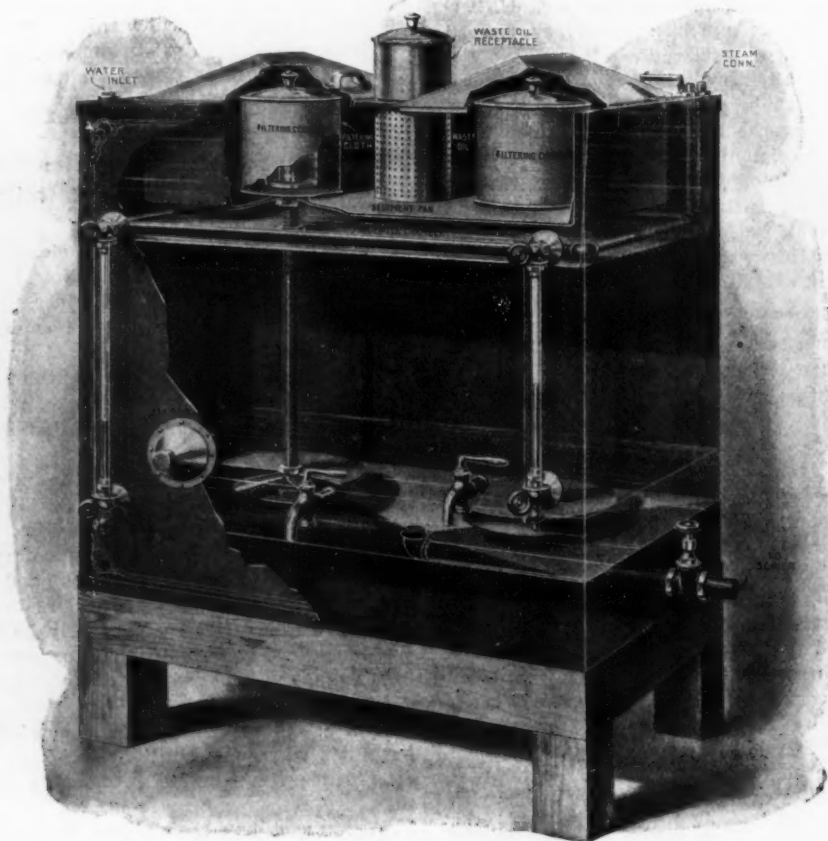


Fig. 1.—Broken Section of the American Unit Type Oil Filter.

The amount of work completed up to December 31, 1904, is as follows:

Number of miles of main track elevated.....	82.84
Number of miles of all tracks elevated.....	425.19
Estimated cost of work done.....	\$28,725,250

The work remaining to be done under ordinances passed and accepted is:

Number of miles of main track yet to be elevated.....	70.39
Number of miles of all tracks yet to be elevated.....	321.14
Estimated cost of work yet to be completed.....	\$20,185,000

There are two ordinances at present before the City Council which if passed and accepted by the roads will bring the grand total of work covered by ordinances to date to \$51,860,250 and work yet to be done amounting to \$23,135,000.

On Saturday, September 30, the new officers of the Amalgamated Association, elected at the Detroit convention in May, entered upon their duties. P. J. McArdle succeeds T. J. Shaffer as president. John Pierce, assistant to the president and one of the organizers of the Amalgamated Association, has retired. Mr. Pierce has the distinction of having attended more conventions of the Amalgamated Association than any other official.

passes through the small perforations, flowing thence horizontally to the two filtering cylinders. During this course the heavier impurities gravitate into the sediment pan, and therefore do not clog up the filtering cloths or filtering material. Each cylinder is wrapped with a cloth through which the oil must first pass. The cylinders contain animal bone black, through which the oil filters and drains through the two tubes into the bottom chamber. Plates attached to the lower ends of the tubes cause the oil to spread out in a thin film so that it may be thoroughly washed by the surrounding water. Any remaining impurities in the oil drop to the bottom and can be flushed out from time to time by opening the valve in the pipe to the sewer.

A distinctive feature of this filter is the hot water chamber surrounding the upper part. Its object is to heat the oil before filtering, which causes it to flow more freely, thus increasing the speed of filtration and the capacity of the filter. When the dirty oil is heated it spreads out and the dirt and grit are more easily separated from it. As a result the bulk of the sediment is not at the bottom but at the top of the filter, where it can be readily removed without interfering with the supply



of the pure oil for the oiling system. The hot water chamber also makes the filter capable of handling successfully the heaviest grades of oil, such as lard, crank case, gas engine and cylinder oils.

The body of the filter is constructed of heavy galvanized iron riveted to a heavy wrought iron frame. All the seams are lapped, riveted and soldered. The upper and lower parts of the filtering cylinders are of cast iron and the two tubes are wrought iron. The provision of the two cylinders makes it possible to clean one at a time and so avoid shutting down the system. The filtering cloths may be removed and replaced instantly, and if it is necessary to change the filtering material one cylinder is removed and the opening into the discharge tube is closed for the time being with a plug. After it is refilled and put back the other may be cleaned. Any kind of filtering material may be used, such as white waste, sponges, excelsior, raw wool, &c. Animal bone black is used in oil refineries, and is considered the most suitable filtering medium. It can be washed out with hot water or gasoline and used repeatedly. If desired filtering

of 4000 tons of structural steel will be used in the building to contain the mill, which will be equipped to roll the medium sizes of beams and channels, ranging from 6 inches up to 12 inches, angles 3 x 3 inches and larger and also merchant steel bars. The mill will be high speed and is expected to turn out upward of 1000 tons per day. At the present time the Jones & Laughlin Steel Company is crowded with orders for structural material, especially for the medium sizes, and in order to facilitate better deliveries and take care of its increasing tonnage in structural steel the company has decided to build this new mill. Work on it will be rushed as fast as possible and it is expected to be ready for operation in April or May next year.

**A Pacific Coast Exposition Ship.**—A Los Angeles enterprise is the fitting up of a ship for the purpose of developing the export trade of that city with various cities in Mexico. The Exposition Ship Company has been incorporated with \$100,000 capital for the purpose

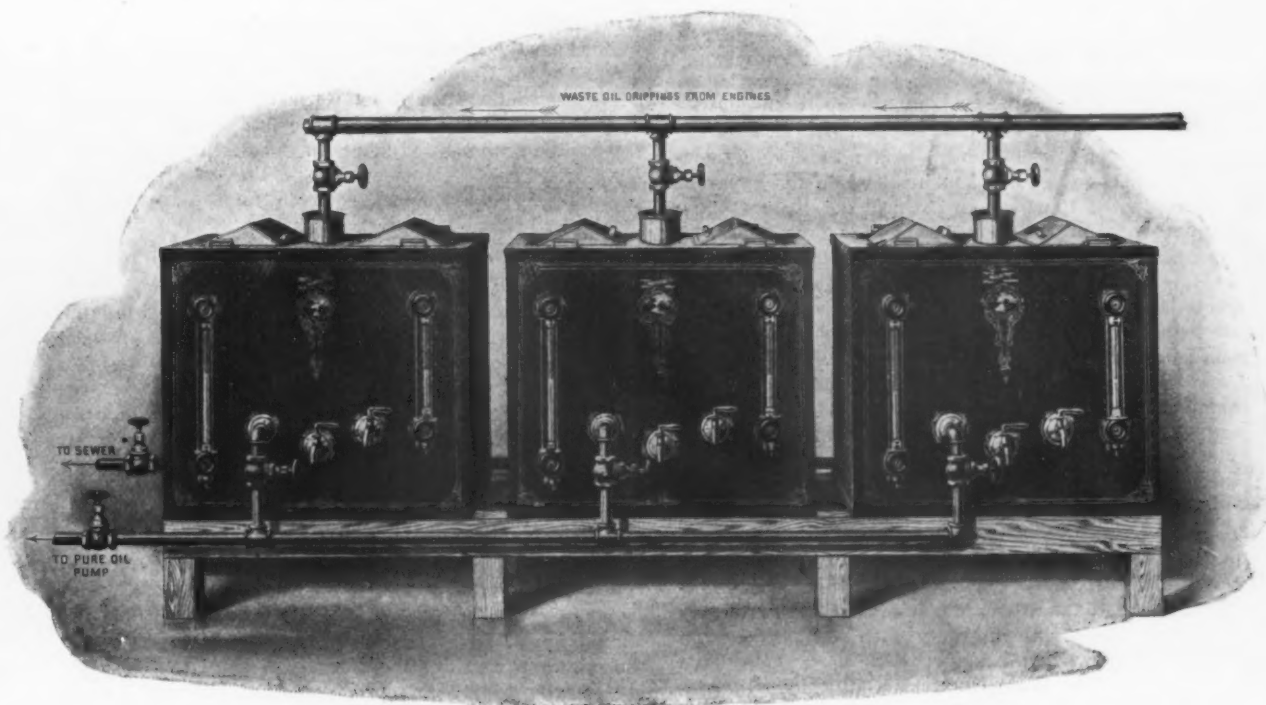


Fig. 2.—Three Units Connected and Operated as One Filter.

cloths alone may be used, in which case several are usually wrapped around the cylinders.

The unit arrangement of coupling one or more filters as indicated in Fig. 2 makes it possible to extend the equipment as the needs grow. The units can be operated together as one filter or separately without changing the pipe connections. Assembled as in Fig. 2 the water in the bottom of the three units can be drained to the sewer through one valve and the supply of pure oil can be regulated by one valve. The filter can be operated independently of an oiling system, and if later one is installed the pipe connections are easily made. It is adaptable to any oiling system. The American unit type filter is made in four uniformly graded sizes, the smallest having a capacity of 100 and the largest 640 gallons per 24 hours. Larger sizes are built on special order.

**A New Jones & Laughlin Structural Mill.**—The Jones & Laughlin Steel Company, Pittsburgh, has about completed plans for the building of a large structural mill, which will be located adjacent to its American Iron & Steel Works, on the South Side, Pittsburgh, the site for the new mill being bounded by Sydney and Carson and Twenty-fifth and Twenty-sixth streets. Upward

and the Spokane, which is one of the finest ships owned by the Pacific Coast Steamship Company, has been leased for the purpose. It will be altered and remodeled to accommodate exhibits, which are now being sought from the manufacturers of that city and jobbers in all lines represented there. In lines which are not represented at that city exhibits will be solicited from Salt Lake, Denver, St. Louis, Chicago and New York firms, who are expected to establish agencies to supply the trade from Los Angeles. The ship will leave Los Angeles January 10 and be gone 41 days, according to the present itinerary. It will make stops at all the principal Pacific Coast cities between San Pedro and Panama, remaining four days in the latter place. Possibly the itinerary may be lengthened to include Colombia, Ecuador, Peru and Chile. It is stated that several financial interests and large importing and exporting firms in different cities in Mexico have commended the project and tendered assistance in building up trade relations between Mexico and Los Angeles. Major W. W. Burke is president of the company, Judge Henry C. Downing of San Pedro is vice-president, Ben C. McLendon is secretary and Winfield Hogaboom is assistant to the president. Permanent offices have been established in suite 508 Bradbury Building, Los Angeles, Cal.

## The Outlook for Reciprocity with Germany.

WASHINGTON, D. C., October 3, 1905.—Secretary Root's return to Washington and active assumption of his duties at the head of the State Department will speedily be followed by a presentation of the German Government's project for a reciprocity treaty with the United States. Whether the schedules will be formally submitted by commissioners as an official tender or merely communicated in confidence for the information of the Secretary of State will probably depend upon Mr. Root's expressed desires, which will be based upon his opinion with regard to the outlook for the ratification of a convention by the Senate and its approval by both branches of Congress. At the present writing there is little to encourage the belief that the tariff leaders in either house are prepared to accept a comprehensive treaty, and it is therefore possible that the submission of the German project may be made to the Secretary of State in confidence and that there will be no formal negotiations looking to the perfecting of a treaty.

### A Discouraging Prospect.

So unpromising is the outlook for the ratification of a reciprocity treaty with Germany, owing to the hostile attitude of the majority leaders of both houses, that the State Department officials have begun to devote themselves seriously to the problem involved in the apparent determination of the German Government to assess the maximum rates of the new German tariff on American products after March 1 next, and the interesting announcement can be made that the Department's tariff experts have secured information which induces them to hope that the imposition of maximum rates on American goods can be avoided, even in default of the negotiation of a reciprocity treaty. Germany's intention to levy the maximum rates of her new tariff on the goods of all countries that do not enter into reciprocal trade agreements before next spring has been very definitely announced, and the State Department has also learned that Germany proposes to denounce the minor reciprocity agreement of 1900, under which we now enjoy the minimum rates of the German tariff. Under these circumstances, therefore, the Department has been much interested to learn that, although neither Great Britain nor France has entered into a treaty with Germany on the basis of the new tariff, nevertheless assurances have been given to both those countries that they will continue to enjoy Germany's minimum rates after next March. Great Britain is said to have secured this promise by making strong representations in which was emphasized the fact that no tariffs are charged on German goods entered at British ports and that therefore Germany receives the most favored nation treatment. In the case of France, however, it is understood that the concessions have been obtained because of the definite phraseology employed in the Franco-German treaty of Frankfort, in which it was stipulated that any tariff concessions made by Germany to any other country should be enjoyed by France.

### Most Favored Nation Principle.

In the case of both Great Britain and France, therefore, it appears that the most favored nation principle has been recognized by Germany as operating to prevent the imposition of maximum rates, and the State Department tariff experts after careful examination of Germany's treaties with the two countries mentioned and our own convention of 1828 with Prussia, which now governs our relations with Germany, have reached the conclusion that the most favored nation clause in the last mentioned treaty is fully as comprehensive as any now in existence. The convention of 1828 contains the following article:

Article IX. If either party shall hereafter grant to any other nation any particular favor in navigation or commerce it shall immediately become common to the other party, freely where it is freely granted such other nation, or on yielding the same compensation when the grant is conditional.

The State Department is ready to concede that if

Germany had limited the minimum rates of her new tariff to the products of the seven countries with which she has negotiated reciprocity treaties the United States could not claim like concessions under the most favored nation clause above quoted. In view, however, of the fact that both England and France are understood to have been assured that their products will continue to pay minimum duties under the new tariff without making any special concessions it will be contended that the United States will be entitled to demand the minimum rates as a matter of right. In the case of Great Britain it has been suggested that in view of her policy of free trade no tariff concessions can be made to any country, but in reply it is urged that if the United States declines to make a treaty with Germany we will still accord German products the same treatment extended to the products of the leading countries of the world.

The force of this argument on the part of the United States will be somewhat diminished by the fact that we have negotiated a series of minor reciprocity treaties under Section 3 of the Dingley act and in addition have made a very comprehensive reciprocal trade agreement with Cuba. The Cuban treaty, however, will be explained on the ground that the island is to some extent a ward of the United States; and as to the minor reciprocal agreements referred to, Germany will be reminded that she is a party to one of the first of these conventions to be promulgated after the enactment of the Dingley law. The development of this line of argument in the diplomatic exchanges soon to take place will be awaited with great interest, as the matter at issue is of the very highest importance.

### To Extend the Convention of 1900.

Should it prove impracticable to retain the minimum rates of the German tariff on the basis above outlined the State Department will rely upon the desire of a large class of the German people to continue in force the minor reciprocal convention of 1900, under which we grant special rates to a small list of relatively important German products, including argols, or cream of tartar; still wines, brandies, works of art, &c. This treaty provides specifically that in consideration of the concessions made by the United States therein all American products shall be entitled to the minimum rates of the German tariff. Obviously this is a one-sided agreement, and it is an open secret that the reductions made by the United States have never been regarded as an offset to the minimum rates of the German schedules. The German people desired to secure American products on the most favorable terms and the Government therefore applied the minimum rates thereto. The influence of the Agrarians, however, has induced a change of policy and the present attitude of the German Government is that the United States must render an equivalent for all favors received. The obvious desire of the German producers of those articles covered by the reciprocity arrangement of 1900 to continue that convention in force encourages the States Department officials to believe that some highly important concessions can be obtained as the price of such continuance. Just what these items will be cannot be foreshadowed and the list will depend largely upon the activity and energy of the representatives of those American industries that may appeal to the Department for aid in this connection. Manufacturers and exporters who believe their trade would be seriously injured by the imposition of the maximum rates of the new German tariff will therefore do well to take the matter up with the State Department without loss of time.

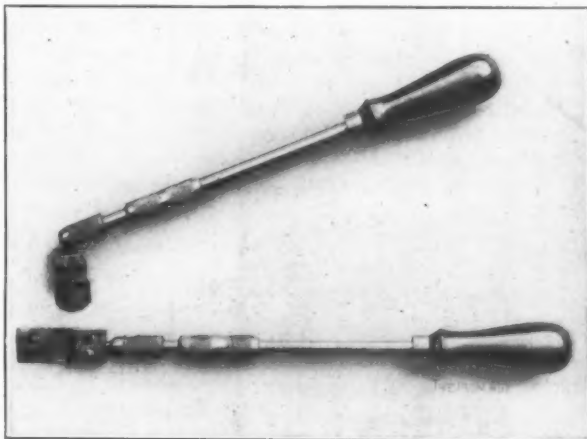
W. L. C.

Dr. Charles S. Howe, president of Case School of Applied Science, Cleveland, Ohio, said in a recent interview that scientific schools should not have entrance requirements beyond what can be met by graduates of the average High School. He referred to the great demand for technically educated men at the present time and said that more than 100 colleges in the United States are now giving engineering training, the number of students approximating 20,000 and the graduates of each year numbering about 3000.

### The Lutz Universal Scraper.

The Universal scraper, made by the Lutz Tool Company, Springfield, Ohio, is arranged to use interchangeable blades, so that it may be adapted for scraping flat, grooved, curved or angular surfaces. The blades are held in a vise head that swings on a ball joint in the knurled socket at the end of the handle bar. The ball of the vise head is forced in the end of the knurled socket by screwing the handle bar and is released by unscrewing it. This makes it possible to instantly adjust and securely tighten the head at any angle. By adjusting it at right angles the tool may be used to scrape bearings, boxes, &c. The lower part of the vise head has two shoulders, one serving as a bearing for the cap plate and the other keeping the blade squarely in position. The handle bar has a hard wood handle at the upper end, and a knurled grip near the blade end that is used particularly when frosting or putting an artistic finish on metal surfaces.

All parts are of high grade steel and are machine cut, so as to work with mechanical exactness. The blades are of steel, and are tempered and ground to square edges, with two sides beveled at an angle of 45 degrees,



An Adjustable Interchangeable Blade Scraper, Made by the Lutz Tool Company, Springfield, Ohio.

unless otherwise ordered. The blades are beveled for scraping dovetails, angular ways and similar surfaces. For scraping journals, babbitted boxes, bearings and other curved surfaces the blades are ground to the arc of a circle. Each blade is adapted to two sizes and four shapes. A great variety of sizes and shapes are regularly made, and they may also be had of high speed steel. As these last much longer and require much less attention they are believed to be worth their slightly greater cost.

### Customs Hearings and Decisions.

#### Steel Strips.

The adjourned hearing in the protest case of Hermann Boker & Co., New York, against the assessment of an additional duty of 1 cent per pound on steel strips imported for use in making car seat springs came before the Board of United States General Appraisers September 29. I. F. Fischer, president of the customs court, presided. There was a full attendance of attorneys and witnesses, the latter being put through a searching ordeal by the lawyers. Last week's hearing resembled the other sessions in that practically the entire day was devoted to the examination of witnesses and the spreading of testimony on the official record. Much of the evidence submitted at the final hearing was highly technical and for the most part concerned processes of manufacture. The Government's contention that the strips are subject to an extra duty was defeated in the United States Circuit Court of Appeals last spring and the present litigation is what is known in customs circles as a new case.

The indications now are that the board will formulate a decision late in November. It is probable, however, that the litigation will have a run through all the Federal courts, including the Supreme Court. The domestic producers of steel and the Treasury Department are standing up for the additional duty, while the importers and the foreign manufacturers maintain that the strips are not dutiable at the extra rate.

#### Transportation Charges and Appraised Value.

The Board of United States General Appraisers in overruling a protest filed by Meyer, Wilson & Co., Portland, Ore., September 29, holds that transportation charges from the place of production to the principal market when added by appraising officers to the entered value of the merchandise cannot be excluded in determining whether additional duty for undervaluation accrues, upon the theory that although properly dutiable charges they form no part of the appraised value of the goods *per se*. Another point made by the board deals with the collector's right to apply for reappraisal. It is held that such right is not sacrificed by a liquidation in accordance with the original appraisal. A reliquidation within one year from the date of entry, based upon an advance in value of the goods upon reappraisal, is valid, notwithstanding the collector's appeal was taken subsequently to the original liquidation.

#### Turned Shafts.

In a decision written for the General Board by Mr. Fischer the claim of O. G. Hempstead & Co., New York, for lower duty on merchandise described as turned shafts was overruled, owing to repeated failures on the part of the importers to appear before the tribunal or submit evidence. The collector demanded duty at the rate of 45 per cent. ad valorem under the provision for manufactures of metal. The official protest filed with the board claimed duty on the merchandise at the rates provided for castings.

#### Flexible Galvanized Iron Tubing.

A decision promulgated by the General Board September 29 overrules a claim filed by Pitt & Scott, Limited, forwarders, of New York. The merchandise is described in a letter sent by Collector Stranahan to the customs court as flexible galvanized iron tubing and as connections for tubes. The tubing was assessed for duty at the rate of 35 per cent. ad valorem, while the connections came in for a 45 per cent. classification. The protest set up the claim that the merchandise is dutiable properly at 2½ cents per pound or else at either 10 or 20 per cent. ad valorem. Although the agents were duly notified they failed to appear at the call of the calendar or offer any evidence in support of their contentions. In view of this the board is obliged to affirm the action of the collector.

#### Gun Metal Coin Holders.

In a decision by General Appraiser Sharretts the Board of Appraisers on September 29 sustained a claim made by G. W. Sheldon & Co., Chicago, it being held that gun metal coin holders are dutiable as manufactures of metal with duty at the rate of 45 per cent. ad valorem. The collector's assessment of 60 per cent. was reversed and a reliquidation ordered.

#### Gramophone Record Disks.

The board has denied claims made by R. F. Downing & Co., New York, for lower duty on metal disks or plates for making gramophone records. The collector considered that the articles should pay duty at the rate of 45 per cent. as manufactures of metal, while the firm contended that the articles were properly dutiable at 25 per cent. as electrotype plates.

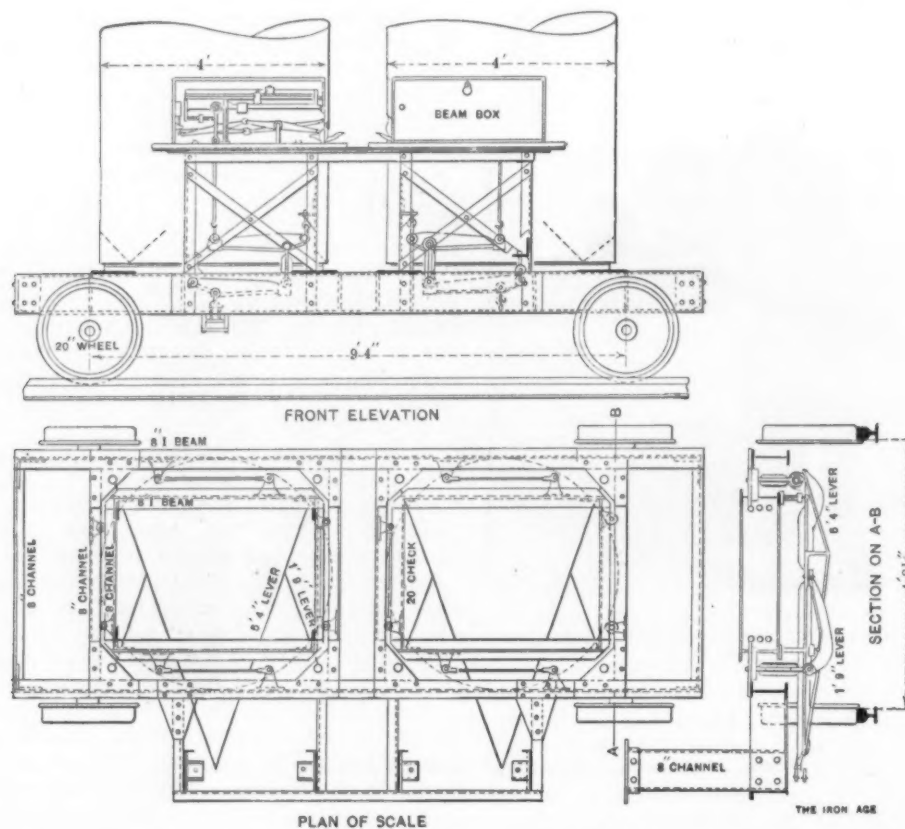
English advices report a shipbuilding boom. A London cablegram dated September 29 states that orders for 100,000 tons of shipping have been placed with Clyde builders during the month, while 44,000 tons of new ships were launched during the same period. This boom is due to the expectation of a great increase in the Far Eastern trade now that the war is over. The Scotch iron and steel makers are stated to be well supplied with orders, and new work can only be placed at an advance. The wages of the workmen are rising.



### The Standard Larry Scales.

The use at blast furnaces of charging scale cars for making up charges is becoming quite extensive. An equipment of ore car charging scales, or larry scales, recently furnished to a large iron and steel company by the Standard Scale & Supply Company, Pittsburgh, Pa., is shown in the accompanying drawing. There are two sets of scales mounted on the car, each being connected with a steel hopper. The car is generally operated on a track directly in front of the stock bins, where it is charged and weighed before the load is delivered to the skip car. The charge in the hopper is released by a lever at the end of the car which opens the hopper door and allows the stock to slide out. The cars are usually propelled by electric motors, with current supplied by overhead trolley wires.

The levers and all the parts connected with the scales except the beams are located under the body of the car.



An Arrangement of Larry Scales, Built by the Standard Scale & Supply Company, Pittsburgh, Pa.

The number of beams is determined by the number of different materials run into a charge. Usually there are five beams, and all are contained in an iron beam box located accessibly at the side of the platform. The beams are arranged horizontally and are of the removable type. The system of levers connecting the beams with the platforms is clearly indicated in the engraving.

### Difficult Shaft Sinking at Detroit.

At Detroit the Independent Salt Mining Company, which is sinking a deep shaft for the purpose of mining rock salt on a large scale, is meeting with some difficult engineering problems. The shaft has been under way for ten months and is down about 100 feet. That it has been able to get down at all is a triumph of no inconsiderable proportions for E. F. Bradt, manager of the company, and Geo. W. Wallace, who has the contract. That it has reached 100 feet seems to those in the enterprise a good indication that the remaining 1000 feet will be safely passed and that in two years or more it will be completed and in condition for mining up to its annual capacity of about 300,000 tons of salt rock.

There has been a combination of difficulties from the

start. The material through which the shaft is to be sunk is clay for about 85 feet, then seamy limestone and sandstone to 1000 feet. The limestone is full of seams carrying water under pressure, and the rock and clay above it have been found to be full of hydrogen sulphide gas so strong that the eyes of the men working underground very soon become seriously, though temporarily, affected, while the gas has a quickly stupefying effect upon the human system. The lower portion of the clay stratum was so wet that it was more difficult to handle than any quicksand. Diamond drill borings made before the shaft was started disclosed the fact that the stone was seamy and showed at a depth of about 180 feet open seams as wide as 18 inches full of live water. The drop shaft system was adopted and the wet clay passed, though the workings were drowned out several times. The water comes in under such pressure that pipes will fill to a height of 12 feet above the collar of the shaft, which is itself about 8 feet above the

water level of the adjacent river. The hydrogen gas is overcome by forced ventilation, two large fans being used to keep the work clear enough to support life. As the shaft goes down the water coming in from the seamy limestone is held back by solid dams of concrete built around the shaft proper. Pipes are first driven into the seams to carry out what water flows off, then the concrete backing is put in, after which the pipes are plugged. In order to fill some seams lower down cement will be pumped in ahead of the sinking and the rock made more substantial before it is disturbed. The shaft is to be 6 by 16 feet in diameter.

Rock salt several hundred feet in thickness exists from the 1000-foot level down, and it is planned to mine this in the same way as other minerals and to abandon the common method of making brine, to be evaporated afterward.

W. G. McAdoo of the New York & New Jersey Tunnel Company announced September 29 that the south tunnel, extending from the foot of Morton street, New York, to Jersey City, had been completed. It is a twin of the tunnel already finished. Mr. McAdoo conducted a party of friends through the tunnel.

### Dutiable Classification of Large Steel Cylinders.

WASHINGTON, D. C., October 3, 1905.—The Treasury Department has issued a circular letter of instructions to collectors at the principal ports directing an important change to be made in the classification of large steel cylinders, which have heretofore been assessed for duty at 35 per centum ad valorem under paragraph 152 of the Dingley Tariff act as steel tubes, but which the Department holds should pay 45 per centum ad valorem as a manufacture of steel not elsewhere specified under paragraph 193, which is the so-called basket clause of the Dingley act. The purpose of the Department is to bring the issue before the courts in the hope that these large cylinders will be differentiated from those of less diameter, which have heretofore been held to be dutiable as tubes.

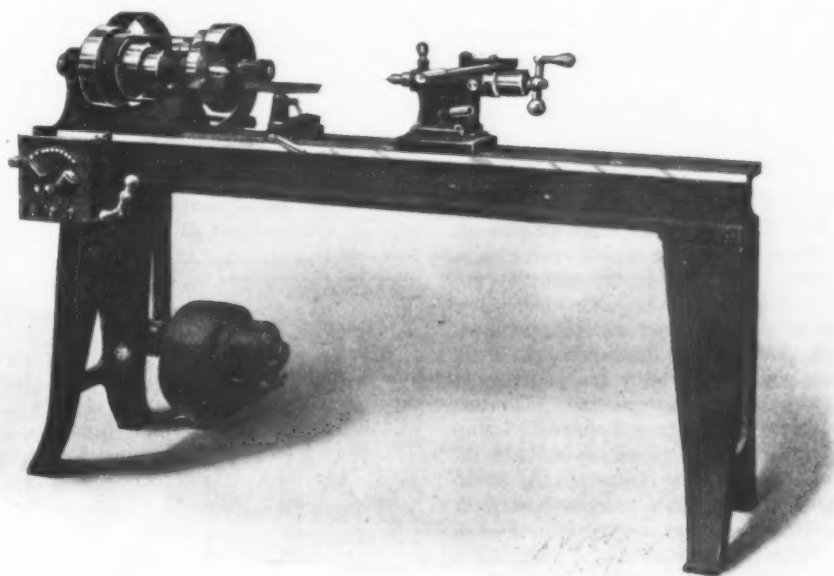
The cylinders involved in the case now before the Department are 4 feet 20 inches in diameter by 19 feet 8 inches in length, and were imported at the port of New York. The appraiser was disposed to assess duty upon them at the rate of 45 per cent. ad valorem as a manu-

with the expectation that a new case will be made and carried to the highest courts, if necessary, to determine the classification.

The Department will co-operate with the importers in this case in expediting the hearings so as to obtain a final ruling at the earliest practicable date. W. L. C.

### The Blount Motor Driven Speed Lathe.

A simple arrangement of motor drive for a speed lathe is shown in the equipment designed by the J. G. Blount Company, Everett, Mass. The lathe has the general features of the standard line manufactured by the company and differs only in the drive. A constant speed motor is used, which is either set on the floor, as shown, or mounted upon a bracket and belted to a countershaft at the back of the head of the lathe. The necessary variations of speed are obtained by cone pulleys on the countershaft and lathe spindle. The countershaft is mounted upon a swinging frame, which is hinged to the back of the lathe and may be adjusted to regulate the belt tension by a screw with a ball handle, shown at the front of the machine beneath the head. The head of the lathe has



Motor Driven Speed Lathe, Designed by J. G. Blount Company, Everett, Mass.

facture of metal, but his attention was called to a decision of the courts in the case of *Downing vs. United States* (99 Fed. Rep., 423), in which, it was claimed, similar merchandise was held to be dutiable as steel tubes at 35 per cent. Being in doubt as to the proper classification, the appraiser appealed to the Department and a special agent was detailed to make a thorough investigation. An examination of the decision of the Court in the *Downing* case showed that the tubes covered thereby were of wrought steel, designed for holding gas under pressure. They were 4 to 6 inches in diameter and from 5 to 18 feet in length. They were originally assessed for duty as manufactures of metal at 45 per cent. ad valorem, and this assessment was confirmed by the Board of General Appraisers. The importers appealed to the United States Circuit Court, however, and that tribunal reversed the board and the collector, and decided that the importation was liable only to duty as "tubes of steel." The Government appealed from this decision to the Circuit Court of Appeals, but was again beaten and finally acquiesced in the ruling of the Court.

Believing, however, that these large cylinders, even if used for the same purpose as the smaller ones, cannot properly be classified as tubes, the Department, on the basis of the report of the special agent employed on the case, has instructed the collector at New York to disregard the Court's decision and assess duty at 45 per cent.

self oiling bronze bushed bearings and may be placed on the bed as shown or reversed, as is usual with speed lathes.

An interesting statement is made in connection with the new boilers recently placed in the Metropolitan Coal Company's steamship *Hector* by the Baltimore Shipbuilding Company, Baltimore, Md. Only two plates were used in the shell of each boiler, these plates being 23 feet 9 inches long by 11 feet 3 inches wide. The only mill in the United States which could roll these wide plates was that of the Worth Bros. Company, Coatesville, Pa. To transport these large plates to Baltimore it was necessary to lay them in the cars at an angle, for if they had been placed upright they would not pass through the tunnels. The curvature of the plates to conform to the boilers was done by the Maryland Steel Company at Sparrow's Point. The boilers are equipped with corrugated furnaces. The front and back lower heads of the boilers are 11 feet 6½ inches wide and 15 feet 10 inches long. Only two pieces were employed in these heads, while usually three pieces are used for this purpose. The boilers were so large that a part of the doorway of the boiler shops of the Baltimore Shipbuilding Company had to be cut away to permit their transfer to the yard. The large shears of the Maryland Steel Company were used to place the boilers in position in the vessel.

## The Financial End of Industrial Engineering.

BY A. E. DIXON.

The first question, or if not the first the most important question, to be settled in connection with an engineering enterprise is, "Will it pay?" In an existing plant the verdict of the balance sheet very quickly determines the ultimate fate of the investment, but in connection with a projected plant an estimate must be made. While it is possible to predict within narrow limits the expenses that will be incurred, and thereby determine whether the investment will be justified or not, in the preparation of this estimate a knowledge of both engineering and accounting is necessary. The principles of accounting involved are not complex, but the writer has never seen them brought out with any degree of completeness.

The purpose of this article is to describe a method used by the writer in arriving at the fixed charges on an engineering investment, and the methods used are applicable to all investments. The case of a power plant to be built is assumed, and while the matter has not been worked out with all the details that should be considered for an actual proposition, the basic principles involved are illustrated sufficiently to show their application and use. Two methods of raising the requisite amount of capital are considered in arriving at the fixed charges, and while the actual details may vary greatly from those assumed, this will not in any way affect the principles involved.

### Determining the Fixed Charge.

A common method of arriving at the fixed charges of an engineering project is to allow a certain percentage of the first cost to cover the items of depreciation, repairs, interest, taxes and insurance, no allowance being made for the fact that the plant must ultimately be rebuilt after a term of years, its equipment replaced as worn out, that the money used to build the plant must be repaid and that a few other items must be considered which are mentioned below. The time required to construct the plant is assumed at two years for the case in hand, during which time no income is derived from the investment and a number of expenses must be met from the funds in hand. In some cases an effort has been made to account for these expenses by distributing them in the annual charge, which is incorrect, since it is impossible to pay these expenses in this manner; they must be met from the capital and not from earnings.

The capital required can be raised in one of several ways: by the issue and sale of stock, by an issue of stock accompanied by an issue of bonds or by an issue of bonds. The fixed charges will vary according to the method used and the terms upon which stock or bonds can be sold.

For the case in hand it is assumed that the capital is to be raised either by the sale of bonds or by the sale of equal amounts, par value, of bonds and stock. In the latter case it is assumed that a portion of the amount realized will be set aside to provide working capital. The terms of sale for the bonds will be the same in both cases—90 per cent. of their par value, 20 per cent. of the amount to be paid down and the balance in two equal payments, the first in 60 days and the second in 120 days. The bonds are to bear 5 per cent. interest and to run 50 years, but can be redeemed at any interest period after they have run ten years, at a price fixed in the bonds. A sinking fund is to be provided for the redemption of the bonds. The object in setting a fixed price at which the bonds may be redeemed is to avoid the risk of having to pay an excessive premium for the bonds, as might easily happen; at the same time the privilege of purchasing in the open market is retained and the cheapest course is adopted. In order to make the stock attractive and reconcile its purchasers to the loss of the interest on their money it is assumed that 25 per cent. is to be paid on subscription and the balance in five equal payments at intervals of 30 days, the first upon the allotment of the stock, which is to be sold at its par value. The stock receives dividends as earned,

and except in rare cases the dividend rate is not limited, though where large dividends are earned it is usual to declare a stock dividend and thus reduce the apparent rate of returns from the stock. This process is commonly termed "watering the stock."

The above refers to common stock. In many cases preferred stock is issued, having a fixed rate of dividend, which may or may not be cumulative. The stockholders are supposed to own the business and participate in its profits, and when the business is wound up and the resources of the company are disposed of the amount remaining, after the payment of all other liabilities, is divided among them. The bonds bear a fixed rate of interest and are secured by a mortgage on the property of the company, which can be foreclosed upon default in the payments of the interest. Occasionally arrangements are made by which the bonds do not draw interest until after the lapse of a stated term or by which foreclosure can only occur after a certain number of interest payments have been defaulted. Such terms, however, affect to a greater or less extent the amount which will be realized from the sale of the bonds. The proceeds from the sale of bonds and stock will be received faster than will be necessary to pay for the plant and its equipment and the surplus funds can be deposited where they will draw interest. The rate of interest on accounts of this kind ranges from 2 to 3.5 per cent., the higher rate on accounts which are comparatively inactive.

### Expenses of Construction.

In regard to the physical property of the concern and its engineering and executive expenses during the two-year period of construction the following apportionment is assumed per \$1000 invested:

Real estate.....	\$75
Building, foundations, &c.....	330
Machinery and equipment, &c.....	595
Total.....	\$1,000

Upon the amount invested in real estate it is assumed that taxes must be paid at the rate of 2 per cent. upon an assessed valuation equal to two-thirds of the cost of the property and that three payments must be made. Therefore a sufficient sum must be set aside or deposited at 3.5 per cent. interest to meet these payments. The amount of each payment will be:

$$\$75 \times 2.3 \times 0.02 = \$1.$$

The present worth of these payments will be:

First .....	$\$1 \div 1 = \$1.00$
Second .....	$1 \div 1.035 = 0.965$
Third .....	$1 \div 1.07 = 0.935$
Total.....	\$2.90

It is assumed that no taxes will be levied upon the building and its equipment during the construction period, but that at the end of that period taxes will have to be paid on the completed plant before it has commenced to earn money. Hence a sufficient sum must be set aside to meet this payment when deposited at 3.5 per cent. interest. The value of the building and its equivalent will be:

$$\$330 + \$595 = \$925$$

The taxes to be paid on this sum are thus computed:

$$\$925 \times 2.3 \times 0.02 = \$12.33.$$

The sum to be set aside at 3.5 per cent. interest to meet this payment when due will be:

$$\$12.33 \div 1.07 = \$11.52.$$

It is assumed that the insurance premium on the plant will be 0.4 per cent. per annum and that partial insurance will be carried on the plant during construction and the first premium after its completion will be paid out of funds in hand, a sufficient sum being set aside at 3.5 per cent. interest to meet the premiums as due. The following amounts will be required:

First year, $\$925 \times 0.25 \times 0.004 =$ .....	\$0.93
Second year, $\$925 \times 0.50 \times 0.004 \div 1.035 =$ .....	1.81
Third year, $\$925 \times 1.00 \times 0.004 \div 1.07 =$ .....	3.46
Total.....	\$6.20

The sums required for meeting the above payments would have been slightly less if compound interest had



been computed, but it was considered best to count only simple interest for these cases, as this method was more conservative. The total amount to be set aside for the above charges will be:

$$\$2.90 + \$11.52 + \$6.20 = \$20.62.$$

Therefore the total amount required for an investment of \$1000 in the plant will be \$1020.62.

#### Proceeds of Stock and Bonds.

The proceeds from the sale of \$1,000 par value of stock on the terms above mentioned will be \$250 as first payment and five deferred payments of \$150 each at intervals of 30 days. The net proceeds of the sale will be the present worth of these payments at 6 per cent. The amount realized from the sale of this amount of stock will be as follows.

First payment.....	\$250.00
Second payment, $\$150 \div 1.005 =$ .....	149.25
Third payment, $\$150 \div 1.01 =$ .....	148.51
Fourth payment, $\$150 \div 1.015 =$ .....	147.78
Fifth payment, $\$150 \div 1.02 =$ .....	147.06
Sixth payment, $\$150 \div 1.025 =$ .....	146.34
Total.....	\$988.94

The proceeds from the sale of \$1,000 par value of bonds will be a first payment of \$180 and two deferred payments of \$360 each. The present worth of these payments at 6 per cent. will be the net amount realized from the bonds, or \$889.37.

For case 1 it will be assumed that the amount requisite to build the plant will be raised entirely by the sale of bonds. For case 2 it will be assumed that equal amounts, par value, of bonds and stock are sold and that 25 per cent. of the proceeds is to be reserved to supply working capital.

The annual interest charge on the bonds at 5 per cent. will be \$50 and the first two payments must be met from the funds in hand, a sufficient amount being set aside to meet the payments as due. The same procedure must be followed in connection with the payments to the sinking fund, it being assumed that the sinking fund can be invested at 4 per cent. owing to the fact that it can be used to purchase the bonds themselves which bear interest at 5 per cent., the interest of the bonds in the sinking fund being paid into that fund in addition to the regular payments and being available with those payments for the purchase of additional bonds. The sum to be set aside for the payment of the first two interest installments on the bonds will be:

First, $\$50 \div 1.035 =$ .....	\$48.31
Second, $\$50 \div 1.07 =$ .....	46.73
Total.....	\$95.04

The sum to be set aside for the first three installments to the sinking fund will be:

First, $\$6.55 \div 1 =$ .....	\$6.55
Second, $\$6.55 \div 1.035 =$ .....	6.33
Third, $\$6.55 \div 1.07 =$ .....	6.12
Total.....	\$19.00

The total of these two sums is \$114.04; therefore the net returns from \$1,000 par value of bonds will be \$889.37 — \$114.04 = \$775.33.

For case 2 the returns from sale of bonds and stock will be  $\$988.94 + \$775.33 = \$1,764.27$ . A reserve of 25 per cent. of this sum, or \$441.07, is to be made for working capital. The net amount available for plant construction will thus be  $\$1,764.27 - \$441.07 = \$1,323.20$ .

It is assumed that the average balance upon deposit during the construction period of two years will be one-half the amount available for the construction of the plant and that interest at the rate of 2 per cent. can be secured upon this deposit. This is equivalent to 2 per cent. upon the full amount for one year and is added to the amount realized from the sale of stock or bonds available for this purpose.

For case 1 this will be  $\$775.33 \times 1.02 = \$790.83$ . For case 2 it will amount to  $\$1,323.20 \times 1.02 = \$1,349.66$ .

The amount to be realized for investment purposes per \$1,000 worth of plant is \$1,020.62 and a sufficient amount of securities must be sold to secure this. The par value of the stock or bonds to be sold for this purpose will be, for case 1:

$$\$1,020.62 \div 790.83 \times 1,000 = \$1,290.58.$$

For case 2:

$$\$1,020.62 \div 1,349.66 \times 1,000 = \$756.20.$$

#### Renewals and Replacements.

The progress of the art will in time render the plant obsolete, even when it is kept in the best sort of repair, and it will ultimately prove not only desirable but absolutely necessary to replace the apparatus and perhaps the entire plant. With this in view it is necessary to set aside each year a sum which will in time provide the funds necessary for plant replacement and which will be available for that purpose when the equipment must be set aside. In order to arrive at the sum required for this purpose an average term of years, based on a knowledge of the length of time during which the various items of the plant and its equipment will render satisfactory service, is assumed for the life of the various portions of the plant. A value is also assumed for each item at the end of the term of its use, either as second-hand machinery or material or as scrap. This value may be based on a knowledge of the value of second-hand machinery, it may be assumed as a percentage of the first cost of the apparatus or it may be based upon the weight of the machine and the price of scrap iron. The last method is the most conservative and the most likely to be correct. The percentage method is easy to use, but a great deal depends upon the percentages assumed, and at the best this way is but a guess. For the case in hand the writer has based his scrap values upon a percentage basis, for the reason that it was the simplest way to deal with an assumed case. This method is not recommended, however. The proportionate amounts assigned to the various items are based on actual cases and their average used. The percentage of the first cost, assigned as the scrap value, is assumed for the purpose of illustration only. It is a very rough estimate, based on some offers made for old second-hand machinery. The six items, among which the amount invested is divided for the purpose of showing the application of this method are of necessity made up of a number of elements of a more or less diverse nature, because in such a general discussion as this it would be impractical to go into complete details as well as unnecessary. The principal used is the same in all cases, and the difference in the computations is that due merely to the differing values of the components here combined in a few groups.

- Building, foundations and allied items:**

Approximate life.....	50 years.
First cost.....	\$330.00
Scrap value, assumed at 5 per cent.....	16.50
Amount for which annuity must be set aside.....	313.50
Annuity for 50-year term at 3.5 per cent., compound interest: $7.63 \times 313.50 \div 1,000 =$ .....	2.39
- Main units and larger auxiliaries, etc.:**

Approximate life.....	20 years.
First cost.....	\$223.30
Scrap value, assumed at 10 per cent.....	22.33
Amount for which annuity must be set aside.....	200.97
Annuity for 20-year term at 3.5 per cent., compound interest: $35.36 \times 200.97 \div 1,000 =$ .....	7.11
- Boilers, tanks, pumps, etc.:**

Approximate life.....	20 years.
First cost.....	\$180.50
Scrap value, assumed at 6 per cent.....	10.83
Amount for which annuity must be set aside.....	169.67
Annuity for 20-year term at 3.5 per cent., compound interest: $35.36 \times 169.67 \div 1,000 =$ .....	6.00
- Surface condensers and minor auxiliaries:**

Approximate life.....	15 years.
First cost.....	\$108.40
Scrap value, assumed at 12.5 per cent.....	13.55
Amount for which annuity must be set aside.....	94.85
Annuity for 15-year term at 3.5 per cent., compound interest: $51.82 \times 94.85 \div 1,000 =$ .....	4.91
- Piping and other allied items:**

Approximate life.....	15 years.
First cost.....	\$46.30
Scrap value, assumed at 7.5 per cent.....	3.47
Amount for which annuity must be set aside.....	42.83
Annuity for 15-year term at 3.5 per cent., compound interest: $51.82 \times 42.83 \div 1,000 =$ .....	2.22
- Switchboards and wiring:**

Approximate life.....	12 years.
First cost.....	\$36.50
Scrap value, assumed at 10 per cent.....	3.65
Amount for which annuity must be set aside.....	32.85
Annuity for 12-year term at 3.5 per cent., compound interest: $68.48 \times 32.85 \div 1,000 =$ .....	2.24

The total annuity for replacement on the above basis will be:

(1).....	\$2.39	(5).....	\$2.22
(2).....	7.11	(6).....	2.24
(3).....	6.00		
(4).....	4.91	Total.....	\$24.88

The annuity for the sinking fund for the bonds will be:

For case 1—  
 $\$6.55 \times 1,290.57 \div 1,000 = \$8.45.$

For case 2—  
 $\$6.55 \times 756.10 \div 1,000 = \$4.95.$

The annual interest charge on the bonds will be:

For case 1—  
 $\$1,290.57 \times 0.05 = \$64.53.$

For case 2—  
 $\$756.20 \times 0.05 = \$37.81.$

#### Fixed Charges Summarized.

The summary of the fixed charges as above noted for the two cases will be as follows:

	Case 1.	Case 2.
Interest on bonds.....	\$64.53	\$37.81
Sinking fund for bonds.....	8.45	4.95
Replacement annuity.....	24.88	24.88
Taxes on equipment.....	12.52	12.52
Taxes on real estate.....	1.00	1.00
Insurance (925 × 0.004).....	3.70	3.70
Totals.....	\$115.08	\$84.86

The writer is of the opinion that an addition should be made to the above to cover the cost of the interest lost on the capital invested in the plant. That is, if the sum put in the plant was placed at interest it would earn, say, 4 per cent., but it is tied up, so that it will not draw interest. Hence this source of income is lost and the fixed charges should be made to cover it. On this basis the fixed charges would be increased, as follows:

For case 1—  
 $\$115.08 + \$40 = \$155.08.$

For case 2—  
 $\$84.86 + \$40 = \$124.86.$

It will be noted that in the above the writer has not included any charge for repairs, for the reason that he prefers to include such charges in the operating expenses. In many cases, however, the repairs are included in the fixed charges. The heading under which they are included is entirely a matter of bookkeeping as long as the charge is included in the account. The annual charge for repairs runs from 2 to 5 per cent. on the first cost of the apparatus.

The total expense of operation for the plant consists of the fixed charges, repair charges, labor and supplies for the operating department, superintendence and executive repairs.

In case 2 interest has been charged on the portion of the capital raised by the sale of stock, for the reason that the stock is only entitled to dividends as earned. In this case also the interest for the entire amount of the bonds sold has been charged, as it is considered that the 25 per cent. reserve made for working capital is provided by the sale of stock.

The fixed charges and a few of the other items are a great deal lower per kilowatt hour in a plant operated on a 24-hour basis than they are on a plant which is shut down for a portion of the day. A few other items increase almost directly with the number of hours per day during which the plant is in operation. Therefore as a measure of the operating efficiency of the plant its kilowatt cost may easily be misleading except where considered in connection with the operating schedule.

A metallic railroad tie recently patented by Benjamin W. Ellicott of Dover, N. J., is claimed to be cheap to manufacture, easy to lay and free of all objections heretofore raised to steel ties. It is made from a single piece of steel and wholly by machinery, so that its cost is reduced nearly to that of the material used, which is determined by the weight it is desired to carry. The tie affords a good foundation across the entire road bed, is easily ballasted and is firmly held in place. It is so constructed that it gives a flexible bearing for the track, yielding as much or as little under the weight as desired. The device for fastening the rails, it is claimed, makes

it impossible for them to spread without tearing the tie apart, and in addition to this the tie is provided with an end brace for extra safety on extremely sharp curves. The patentee will shortly arrange for the manufacture of the ties and will place them on the market.

### The Bonnett Tire Inflator.

A novelty in the form of a miniature air compressor particularly intended for carrying on automobiles, to be used in the inflating of pneumatic tires, has been placed on the market by J. C. Bonnett, New Haven, Conn. The compressor is a practically designed and carefully made

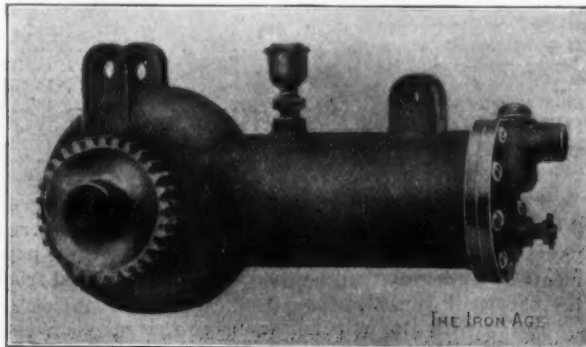


Fig. 1.—The Bonnett Air Compressor for Inflating Automobile Tires.

little machine, having large valves and a trunk piston to which are fitted accurately ground eccentric piston rings. No soft packing is used. The cylinder is lapped smooth and true after boring and before the pistons are fitted to insure air tight joints that will remain so. The connecting rod is of gun metal, with means for taking up wear.

The crank case, containing all the working parts, is entirely inclosed for protecting parts from dust and dirt and to provide a chamber to retain oil, so that practically no attention is required. On the inside of the cylinder casting a lip is formed, making an annular chamber, which is kept filled with oil by splash from the crank

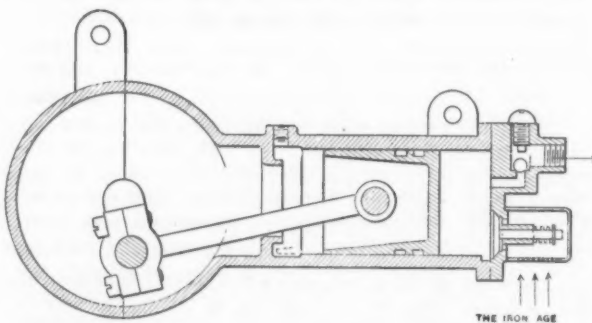


Fig. 2.—Longitudinal Section of the Bonnett Tire Inflator.

chamber. The piston dips into this at each stroke, so that abundant lubrication is afforded the cylinder walls.

As the illustrations, Figs. 1 and 2, indicate, the machine is compact. It weighs but 8 pounds and is capable of pumping a 30 x 3½ inch tire to 80 pounds pressure in one minute. The pump is gear driven from the engine shaft and has means of throwing it in and out of action. On large cars the compressor may be connected to pump into a receiving tank, maintaining a constant pressure, which may be used for blowing the horn and in cleaning for removing dust from the cushions.

All the large works engaged in electrical industries in Germany have announced to their customers that, owing to increased wages and cost of raw materials, a general advance of 10 per cent. has been made in their products, including motors, machines, apparatus, fittings, &c.

## Water Power Development in Canada.

Sir William Henry White, past president of the Institution of Civil Engineers, contributes to the recently published volume of the "Proceedings of the Institution" valuable data concerning the visit of a body of its members to the United States and Canada in September, 1904. Of special interest are the descriptions of important engineering works in Canada, particularly the development of water powers, and from this portion of the address extracts are given below:

Great schemes for the development of the natural resources of the Dominion are in progress and in contemplation. These include the construction of a new trans-continental railway and of other new and important railway communications, the development of the waterways between the great lakes and the Atlantic, fuller utilization of numerous sources of water power for industrial purposes and for the production of electrical energy, as well as many other methods of increasing and transporting the natural products and the growing manufactures of this marvelous country. No engineer who visits Canada can fail to be impressed by the enterprise and courage with which the Government and private associations are facing these and other great problems, upon the solution of which depends the making of a nation. When it is remembered that the total population of Canada, with its immense extent and wonderful possibilities, is only about 5,500,000 people, the scale and cost of these great engineering works seem even more remarkable. It is a fact of which we may be proud that British capital has much to do with these undertakings and it may be hoped that it will occupy the first place.

The extent of the shipping and trade of the lakes is hardly realized here, or the importance attaching to possession of traffic from the lakes to the open sea. On the other side this is well understood and the competition is keen between the United States and Canada. On the improvement of the Erie Canal it is proposed by the United States to spend about £20,000,000. The Canadian Government, about the time of our visit, decided to spend £50,000 on surveys and investigations as to the probable cost of making a new waterway 22 feet deep from Georgian Bay, on Lake Huron, by the Ottawa River, to Montreal. This would be the shortest distance (425 miles) from the lakes to Montreal, the port lying furthest up the St. Lawrence to which ocean going ships proceed. By existing routes the shortest distance from Sault Ste. Marie to Montreal is 950 miles; the new canal would reduce this to 610 miles. The magnitude of the shipping passing through the canals at Sault Ste. Marie may be judged from the statement that so long ago as 1889 the aggregate tonnage approached 7,250,000 tons and exceeded the corresponding tonnage for the Suez Canal by nearly 500,000 tons, although the navigation was open only 234 days in the year. In 1903 the traffic rose to 14,000 vessels of 27,750,000 tons and in 1904 to 12,200 vessels of nearly 24,500,000 tons. The Canadian authorities are clearly well advised in endeavoring to improve the communication of such a traffic with the sea via the St. Lawrence, and the results of the surveys of the Georgian Canal will be awaited with interest.

The Soulanges Canal, which we visited, forms part of the St. Lawrence navigation. It is 14 miles long and has five locks, with a total rise of 84 feet. The locks are 280 x 45 feet, with 15 feet of water on the sills. The locks and sluice gate mechanism are operated by electric motors, and the locks can be filled in five or six minutes, through cast iron pipes 30 inches in diameter, passing through culverts in the side walls. The breadth of the canal at the bottom is 100 feet and at the water surface 164 feet. About £1,350,000 has been spent upon its construction and equipment. The electrical equipment is worked by water power, the head being 20 feet; the total output is about 530 kw. The canal is lit by 219 arc lamps of 2000 candle-power, placed 480 feet apart, so that the navigation proceeds night and day. Electric power is also used to operate locks and bridges. There are seven bridges of 180 feet span, each weighing about 100 tons.

Another work of which we had particulars given us was the Richelieu and Trent Canal, which will join Georgian Bay on Lake Huron to Lake Ontario. The route is about 200 miles long, about 20 miles being canal. It embraces a hydraulic lift lock 140 x 33 x 8 feet, the rise being 65 feet. The fundamental idea of the promoters is to bring grain and other freight in large lake steamers to Georgian Bay, then to transship into barges of considerable size, which will pass through the canal to a sheltered port on Lake Ontario, from which place groups of barges would be towed to Montreal and their cargoes transferred to ocean going ships.

As to the St. Lawrence itself, the navigable channel to Montreal for large ships has a minimum width of 300 feet, extending to 550 feet at the curves, and it is expected that a depth of 30 feet throughout will be obtained next summer. Extensive works are also in progress for the improvement of the port and for increased accommodation for large ships. Montreal obviously intends if possible to maintain its position as the head of ocean navigation and the terminus of the great canal systems.

### Canada Rich in Water Powers.

The resources of Canada in water power are unsurpassed. Already large use has been made of them for the generation of electricity and for industrial purposes. What has been done as yet is only a commencement of a great development that will have far reaching consequences on the future of the Dominion. At Ottawa we visited the Chaudière Falls and the power houses of the Hull & Ottawa Power Company, the Ottawa Electric Company and the Ottawa Electric Railway as well as the Ottawa Carbide Works, the Eddy Company's match, pulp and paper mills and Booth's lumber and pulp mills. No one could fail to realize the enormous possibilities of development in the pulp and paper industry, lumber being abundant and easily brought in rafts down the river to the mills, power cheap and a good supply of labor available. There is at present a great export of pulp to paper mills in the United States, but Canadians are not slow to realize that paper rather than pulp should be their main product. We were informed that within a few miles of Ottawa there are 200,000 horsepower of water power and within a radius of 45 miles nearly 1,000,000 horse-power.

Outside Quebec, at the famous Falls of Montmorency, we visited another interesting electricity generating station. The falls are nearly 270 feet in height, the head utilized being 200 feet. Five turbines are installed, each of 1000 horse-power, and the current is employed in electric traction on the Quebec Railway and for lighting.

An excursion was made to the Shawenegan Falls from Montreal. The falls are about 150 feet high and the water power is estimated to be sufficient to produce upward of 100,000 horse-power. Here water is taken out of the river by a canal 1100 feet long, 100 feet wide and 20 feet deep. In the power house there are installed three pairs of inward discharge turbines, each pair (at 180 revolutions per minute) being capable of delivering 6000 horse-power. A fourth unit was being installed and will be capable of delivering 10,500 horse-power. The electric energy is utilized in factories 2 to 20 miles distant and in Montreal, 85 miles away. At the latter city 6000 horse-power are now being delivered at a pressure of 50,000 volts. Among the industries obtaining power from these falls are electric lighting and traction, the manufacture of calcium carbide and ferromanganese and pulp mills. Linen mills are to follow. Within four years of the time when the Shawenegan Falls were accessible only by canoe they have been thus utilized and made readily accessible, with a population in the district of 3000 people.

### Power from Niagara.

To the Niagara Falls Hydraulic Company belongs the honor of having made a systematic and large scale attempt to utilize the power of the falls about 50 years ago. No practical result was attained until 1870, and only in 1881 was the supply of electricity undertaken by means of three water wheels under a head of 75 feet, developing 1500 horse-power. In 1895-1896 a second



power house was erected, placed near the water's edge in the gorge and utilizing the full head of 210 feet. Subsequent additions have raised the total development of this power house to nearly 35,000 horse-power; now a third power house is in hand to give an additional development of 100,000 horse-power.

The Niagara Falls Power Company, also on the American side, began its preparatory work in October, 1890, and commenced actual work about five years later. An international commission, including Lord Kelvin and Professor Unwin, who was one of our party, was appointed to settle the general plan of the works. On its advice the turbines were placed in a wheel pit about 425 feet long, 18 feet wide and nearly 180 feet deep. They work under a head of 136 feet. The generators are placed on the surface and are driven by vertical shafts formed of sheet steel between the bearings. There are ten units in the first power house constructed, the aggregate development being about 50,000 horse-power. A second power house has since been constructed on the same general lines with 11 units. At the present time, therefore, this company is capable of developing about 105,000 horse-power, of which 60 per cent. is utilized in local industries at Niagara Falls and 40 per cent. at Buffalo and other places, some of which are 35 miles distant. The transmission is effected at a pressure of 22,000 volts. Power is supplied to more than 100 factories which are engaged in many branches of the electrochemical industry, in electric traction and lighting, milling, iron and steel manufacture, mechanical engineering and other work. One of the new companies on the Canadian side is really an extension of this American enterprise and will add 110,000 horse-power to its output when complete.

On the Canadian side a concession was granted in 1892, but nothing was done until 1901. Three new undertakings are now being rapidly advanced and the works were in a condition that permitted an inspection of nearly all their details. No one visiting them can fail to be impressed by the grand scale and the enormous expenditure necessary to utilize the water power, as well as the large demands made in their execution upon branches of engineering other than the purely electrical. Two of the three companies are following in principle the system of the American Niagara Power Company—placing the turbines in wheel pits 150 to 165 feet in depth—the generators being placed in power houses at the ground level. The aggregate development in both establishments will be 235,000 horse-power. The Ontario Power Company, on the other hand, follows the example of the earliest American company. The power house is placed in the gorge below the falls, with an effective head of 175 feet; the controlling and distributing station is placed at an elevation of 250 feet above the power house, 550 feet back from the gorge. About 180,000 horse-power represents the power to be developed eventually, but at present only one of three conduits is being laid underground from the head works near Dufferin Islands to the power house. The conduit is nearly 6200 feet in length and 18 feet in internal diameter; it is built of  $\frac{1}{2}$ -inch steel plates and stiffened on the upper half of its circumference by 7-inch T-bulbs spaced 4 feet apart. An open relief and spillway are provided at the lower end to reduce fluctuations of head and pressure which may result from the alterations of load.

The aggregate development of these three works when completed will amount to more than 400,000 horse-power and a fourth establishment on the Canadian side will develop 40,000 horse-power, which will be utilized chiefly in the city of Hamilton. The grand total of power derived from the Niagara River will then be about 700,000 horse-power, two-thirds being on the Canadian side.

Two of the three great undertakings on the Canadian side are practically due to American capital and enterprise, a fact which does not redound to our credit, having regard to the enormous amount of British capital available for investment. The third company is distinctively Canadian and is closely associated with Toronto. At the generating station the current will be at a

pressure of about 12,000 volts, but it is contemplated to transform it to 40,000 to 60,000 volts for transmission through overhead lines carried by two lines of steel towers 46 feet high placed at intervals of 400 feet. The capital of this company is £1,500,000 and its total development of power will be 125,000 horse-power. These figures give some indication of the enormous expenditure in the Niagara district necessary to develop 700,000 horse-power.

### Labor Notes.

An unusual decision in a case of contempt which came up in the Superior Court of Cincinnati is being discussed by members of the National Founders' Association. Judge L. M. Hosea issued an injunction on September 30, 1904, restraining the Iron Molders' Union of North America, and its officers and agents, from interfering with the I. E. Greenwald Company of Cincinnati in carrying on its business, either by going to the homes of employees of the company and intimidating, coercing or unlawfully persuading them to leave the employ of the company, or inducing workmen by threats, intimidation, violence or unlawful persuasion from continuing in the service of the company. John R. O'Leary, third vice-president of the local union, and Henry Hinnenkamp, business agent, were brought before the court recently charged with violating the injunction order by going to John East and Frank Reid, two nonunion men employed by the I. E. Greenwald Company, and arranging for both to take cards in the union. Money payments to the amount of \$111.50 were made to the two men by the officers of the union. O'Leary admitted in court that on going to East he told him it was "unfortunate that he should start in as a strike breaker," and that "the odium would stay with him a long time." Hinnenkamp testified that he had charge of the Cincinnati molders' strike on behalf of Local Union No. 4, and that part of his duty was to "get scabs." The court held that there was an implied threat in the statement of O'Leary and that "to seduce away the employees of the Greenwald foundry for the purpose of aiding the strike was directly to hinder and obstruct and unlawfully interfere with" the business of the foundry. It was therefore adjudged that the two union officers had violated the order of injunction, and the court sentenced them to pay a fine of \$100 each and to give a bond of \$500 to obey the injunction so long as it should remain in force. An appeal from this decision was taken by the union.

An adjustment has been made recently of a difference of some months' standing between the union molders and core makers of St. Paul, Minn., and the members of the National Founders' Association of that city. In the spring of 1904 the wages of nearly every molder in St. Paul were reduced to the minimum provided in the agreement between the molders and founders. The founders desired to make a graduated reduction so that the more skilled men could make higher wages than the least skilled, thus necessitating a lowering of the minimum, but finally yielded to the horizontal principle of the union. In the early part of the summer of 1905 the molders and core makers asked for an increase in the minimum wage rate. This the foundrymen refused, urging the injustice of all mechanics working at the same wage and calling attention to the fact that the existing minimum was in excess of what many of the poorer workmen could earn. After a number of interviews between officers of the union and representatives of the foundrymen, the latter made a proposition to select a number of the best men whose wages were reduced heavily in 1904 and restore about 50 per cent. of the cut. They were willing to make a similar advance in the cases of certain core makers. They refused, however, to raise men who were working at the minimum in 1904 and whose wages were not reduced at that time, though the foundrymen felt they should have been. An alternative proposition made by the foundrymen was to arbitrate the entire wage question for both molders and core makers. Each side was to select two arbitrators, the

four to choose as a fifth man some practical molder, foreman or foundry proprietor. The molders finally decided to accept the first proposition, and the original minimum wage rate is still in force for the men of minimum skill, while a partial restoration has been made of the amount taken from the wages of the higher grade men in 1904.

The management of the Washburn shops of the Worcester Polytechnic Institute, Worcester, Mass., has refused to conform with the demands of the molders' union, and as a result the four molders and one core maker employed in the foundry have left their work and their places have been taken by nonunion men. The foundry was never conducted on a union basis. In fact, the matter never received attention until by chance a nonunion man was hired. The union men objected and their objections not being sustained they left their places. The foundry will be conducted strictly on the open shop basis.

In regard to the advance of 2½ per cent. recently granted to machinists at Youngstown, Ohio, it can be stated that the William Tod Company and the Lloyd-Booth department of the United Engineering & Foundry Company granted this advance, and in addition the old agreement as to hours, overtime, &c., remains in force. The impression was general that this agreement was between the employers and the Machinists' Union, but, as stated above, it was made by the William Tod Company and the Lloyd-Booth Department, the relations between whom and their men under this agreement having as a rule been quite satisfactory.

At the Exeter Machine Works, Pittston, Pa., a strike of molders occurred recently, the men making complaint that the firm had one more apprentice than the rules of the Iron Molders' Union permitted. The company states that at the time it had fewer apprentices in its shop than ever, and owing to the fact that the time of two apprentices would expire within a few weeks it placed an additional apprentice in the foundry. Nonunion molders have been employed to take the place of the strikers. A few days after the molders' strike the machinists walked out, apparently in sympathy with the strike of the molders. Nonunion men are now employed in the machine shop also.

About 500 employees at the shops of the Baltimore & Ohio Railroad, at Glenwood, Pittsburgh, have been given a voluntary advance in wages, effective from September 1, as follows: Metal workers receiving 12½ cents and over, but not more than 25 cents, are to have an advance of 1 cent an hour. Mechanics receiving 22½ cents or over, but less than 25 cents, are to receive 25 cents an hour. Those who get 25 cents or over, but less than 27½ cents, are to get 27½ cents. Those receiving 27½ cents or over, but less than 30 cents, will receive 30 cents. This will amount to an advance of from 15 to 25 cents a day for the different classes of employees affected.

A cablegram from Berlin, Germany, says that the association of metal working establishments of Berlin, which embraces all the important firms, voted to lock out the entire working force provided the threatened general lockout in the electrical branches takes place. The association also voted to close immediately its employment agency, so as to bring pressure upon the electrical employees by excluding the prospect of their employment elsewhere. The labor committees of the electrical workers' unions voted to-day to appeal to the Government Arbitration Bureau with a view to the settlement of their differences with the employers.

The Pattern Makers' Union of New York has decided to add 75 miles to the radius of its influence, thus extending its jurisdiction to points within 100 miles of New York. It is probable that other unions will take similar action. The union pattern makers say that this step is in the interest of employers as well as of the union; that since wages and hours will be uniform employers will be on a plane of equality and will be able to contract for work without any fear of ruinous competition. The first step taken under the new arrangement

was the reorganization under the auspices of the New York union of a local lodge of the Pattern Makers' National League which was disbanded some time ago.

### August Iron and Steel Exports and Imports.

As compared with July an increase is shown in both imports and exports of iron and steel in August by the report of the Bureau of Statistics of the Department of Commerce and Labor. The total value of such exports, including manufactures of iron and steel but excluding iron ore in August, was \$12,566,980, against \$11,036,843 in July. Taking the commodities for which quantities are given, the following table shows the movement for the month and eight months:

Commodities.	August.		8 months ending August.	
	1905.	1904.	1905.	1904.
	Gross tons.	Gross tons.	Gross tons.	Gross tons.
Pig iron.....	2,222	1,330	33,763	27,654
Scrap .....	508	2,772	4,792	17,024
Bar iron.....	2,248	3,429	22,237	20,842
Wire rods.....	171	5,310	3,635	13,751
Steel Bars.....	1,335	2,434	13,897	17,405
Billets, ingots, blooms..	19,961	28,379	126,524	236,451
Hoop, band, scroll....	359	200	1,956	2,118
Iron rails.....	.....	5	.....	1,387
Steel rails.....	34,874	35,631	190,668	210,321
Iron sheets and plates..	850	442	4,342	3,106
Tin plates and terne plates .....	164	916	6,146	4,659
Structural iron and steel .....	4,464	5,035	50,004	31,153
Wire .....	10,855	6,019	89,865	73,081
Cut nails.....	632	532	5,653	6,596
Wire nails.....	3,296	1,773	25,189	18,616
All other, including tacks .....	378	219	2,815	1,874
Totals.....	82,317	94,426	580,886	686,037

The exports of 82,317 gross tons, as shown above for August, compare with 67,071 tons in July and 71,490 tons in June. The items in which the greatest increase occurred are billets and steel rails. During the month 2519 tons of steel rails were exported to Europe and only 380 tons to British North America, but South America took 16,145 tons; Mexico, 11,817 tons, and the West Indies, 2850 tons. The Far East took rather insignificant quantities, Japan being credited with 695 tons and other Asia and Oceania 450 tons.

The total value of imports of iron and steel, including manufactures but excluding iron ore, in August was \$2,318,502, against \$2,646,258 in June. An increase was shown, however, in the commodities for which quantities are given, the total for the month being 39,504 tons, against 36,444 tons in July. The most important increase over the preceding month was in tin plates and terne plates, of which 9597 tons were imported, against 4705 tons in July. The details for the month and eight months are given in the following table:

Commodities.	August.		8 months ending August.	
	1905.	1904.	1905.	1904.
	Gross tons.	Gross tons.	Gross tons.	Gross tons.
Pig iron.....	17,399	4,282	127,215	52,536
Scrap .....	353	1,342	8,269	10,236
Bar iron.....	3,803	1,547	22,946	14,856
Rails .....	1,969	201	11,867	34,299
Hoop, band and scroll..	537	11	1,811	1,243
Billets, slabs, bars, &c. steel in forms n.e.s.	1,570	709	9,540	8,202
Sheets and plates....	261	175	1,496	3,456
Tin plates and terne plates .....	9,597	7,127	50,329	49,242
Wire rods.....	2,138	1,217	11,335	10,732
Wire and articles made from .....	237	277	2,584	2,825
Structural iron and steel .....	1,600	708	4,663	6,508
Chains .....	24	28	173	269
Anvils .....	16	0	123	92
Totals.....	39,504	17,624	252,351	194,300

The total value of exports of iron and steel, including manufactures thereof but excluding iron ore, for the eight months ending August was \$90,772,917, against \$81,415,122 in the corresponding period of the previous year. The total value of imports of the same character for the eight months ending August was \$17,411,450, against \$14,760,468 in the corresponding period of the previous year.



# THE IRON AGE

1855—1905.

New York, Thursday, October 5, 1905.

DAVID WILLIAMS COMPANY,	.	.	.	.	.	.	.	.	.	PUBLISHER
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## Overestimated Net Profits of Good Times.

The heavy pig iron purchases of the fall of 1905 have come earlier than those of the latter part of 1904. Therefore earlier than was the case last year the factor of increased costs in the year just ahead has entered into the reckoning. It is a phase of every time of prosperity in the iron industry that increments of cost begin to put in an appearance often more promptly than the producer could wish. Moreover, such appreciations are often based on prices for product which happen to prevail at the time, even though the manufacturer's books show relatively little business done at that level, contracts having been entered into freely at prices considerably lower.

Just now pig iron producers who buy their coke and ore in the market are confronted with an actual advance in the former and the probability of an advance in the latter beginning with the opening of the season of navigation in 1906. If the record of last year is repeated the stray lots of Lake Superior ores bought in the latter part of the present season or from the docks after navigation closes will cost more than the contract basis of this year. Wages will advance also where sliding scale arrangements exist, as in rolling mills and steel works, and such advances in due time tend to increase labor costs on products outside of scale arrangements.

The effect of these various augmentations in cost is to bring the net earnings of blast furnace and rolling mill companies not grounded in their own ore and coal considerably below the calculations of those who take market prices of pig iron or rolled products as a basis of reckoning. The case is paralleled in some degree in the operations of the railroads. For months the statements of the leading lines have shown improvement in gross earnings as compared with 1904, but at the same time a notable increase in operating expenses. To some extent this last is due to the greater tonnage moved, but for the most part it comes from heavy expenditures for improvements. The *Financial Chronicle's* returns of railroad earnings for the first half of 1905, for example, show that on 167,856 miles of road out of a total of 205,000 miles in the United States the increase in gross receipts over the first six months of 1904 was \$57,012,454. The addition to net earnings from this great expansion in gross was but \$18,916,342. It is the habit of railroads to make additions and improvements in times of greatest activity, highest cost of materials and labor and greatest difficulty in getting deliveries.

In the case of manufacturing industries the pursuit of this same practice often makes much more serious inroads upon earnings than do the various increases of cost of raw material and labor. This year iron and steel works, like the railroads, have been applying some of their increased earnings to enlarging and improving plant, and this campaign of expenditures will continue for months. Some of it will be financed by additions to capital account, but most of it will come from current

earnings and will thus diminish materially the amounts that on the surface might be regarded as applicable to dividends. "A dollar for improvements and a dollar for dividends" is the phrase used to describe the policy of a leading trunk line that has often been considered well nigh prodigal in its outlays for new work. The iron trade shows a parallel to this policy. Turning to the record of the United States Steel Corporation we find that the total expended in four years and three months for improvements and repairs, for building new plant and acquiring new mineral properties was \$184,500,000. In the same period the dividend distributions aggregated \$178,974,824. It is to be said that the cost of the new work and the improvements for which outlays have been made since the corporation was organized has been much in excess of the average cost of like work in the decade preceding 1901, but it is scarcely necessary to add that the dividends also are quite beyond anything that would have been paid in any four and a quarter years of the same decade. At all events the showing may be suggestive of the basis of reckoning that may properly be adopted for the future.

## Optimism on Canada's Iron Industry.

In connection with the visit to Canada of the inventor of the Héroult electric furnace an interview with Dr. Héroult appears, in which in a few enthusiastic sentences Canada is sent to the head of the column of iron producing countries. Only a matter of ten years, it is said, is required to make Canada a great metallurgical country and the Dominion iron industry is expected to be "larger than in any other country of the world." And further: "Canada will yet furnish to the world its iron supply."

Giving all credit to the capital and enterprise which have brought Canada thus far on the road to eminence in iron and steel production, it is pertinent to ask what has been discovered in recent weeks on which to base the splendid optimism of these predictions? What are the ores and what the coking coal on which so colossal an industry is to be reared? Even under the stimulus of bounties, so graded as to furnish every inducement to Canadian steel manufacturers to use domestic ores exclusively, ores are being imported by the leading steel interests across the border. If the bounty system does not develop Canadian ore resources, what reason is there to expect that they will assume commanding importance when bounties are no longer given? J. S. Jeans, secretary of the British Iron Trade Association, in his book of last year on "Canada's Resources and Possibilities," wrote most appreciatively of the former and optimistically of the latter. Concerning iron ore there was the same vagueness of statement in Mr. Jeans' presentation of Canada's resources that has appeared in connection with other predictions of a bright future for the iron industry across the border. The book points to the Newfoundland iron ore deposits as the principal source of supply in British North America and intimates that Newfoundland's relation to the Dominion will be more intimate at some time in the future. Yet, even reckoning Newfoundland and the Dominion as one, neither in quantity nor quality of ores can the demands of a great Canadian iron industry be considered as provided for.

It is only recently that London iron trade journals called attention to the nonfulfillment of the prophecies of a few years ago that Canadian works then building would inundate Great Britain with cheap pig iron and steel. It would seem that performance rather than



prophecy is what is wanted now, whether the instrument of production be the electric furnace supplied with current from Canada's abundant waterfalls or the old-time blast furnace of modern type that has made such a conspicuous record in the United States.

### An Industrial Lesson from London.

American manufacturers have long since recognized the advantage in migrating from the great centers of population to suburban neighborhoods in securing economy of production. London is awakening to the same need, and the experiments so far made in this direction have proved the excellence of the results obtained. In an editorial discussing the real necessity of manufacturers getting out of the densely populated neighborhoods of the city, *Engineering* of London brings out the fact that nothing but good has come from removal to the country in every instance. With the exception of a difficulty in securing skilled labor during the period immediately following the removal, and this in a few instances only, "all London emigration experiments have proved successes. The men have been more contented, more stable and altogether more prosperous. Wages are lower. In one case the rates in London had been 15 per cent. higher for skilled labor and 30 per cent. for unskilled labor than in the provincial town; in another instance the differences recorded are 5 and 10 per cent.; in a third case there was a difference of from 2 to 4 shillings per week, and in yet another instance the London rate was from 10 to 16 per cent. greater." The average is 10 to 15 per cent. less than in the metropolis. The results have been fully as important from the employer's point of view in the general *morale* of the workmen. As this English journal puts it, "The open country, the greater opportunity and disposition for gardening and other pursuits, as well as participation in athletic games, have also had their effect on the workmen, their physique and their attitude toward work."

The arraignment of London as a manufacturing center, as here summed up, may be applied to some of the larger of the American cities: "One of the causes contributing to the increase in the number of unemployed in London and other large (English) cities is the retention of factories within crowded areas and no opportunity should be lost of directing attention to the fact. There are, of course, factories which are integral parts and inseparable from the metropolis; but these are comparatively few in number and do not in any degree alter the fact that there continue to be within London and other large cities manufacturing works which ought long since to have been removed to districts where there is ample room and where the surroundings are more conducive to economy of work and to the health of the workers. The presence of manufactories in areas which have become densely populated is inimical to the best interests of the workers, and entails loss on the capitalists who own them, and consequently on the nation at large. A factory in London is likely to be inefficient because the fixed charges are greater than they need be, labor costs are higher and in many cases insufficiency of room results in an increased amount of handling of material. These disadvantages, combined with the higher cost of transport, intensify the inability of the manufacturer to compete on equal terms with firms having works more favorably located, situated in the country or abroad. Consequently there is greater difficulty in keeping the factories going during times of depression and keen competition, and as a result men are discharged and go to swell the number of the unemployed."

London is the extreme case of the disadvantages of city locations for large industries. But probably New York is as bad in many ways. Other large American cities suffer correspondingly. This is well recognized by many manufacturers, but there are still those who prefer for various reasons to make no change. New York City will drive them out eventually, as property is demanded for other purposes. Other large cities will be much longer in securing the removal of industries by the natural evolution of the city neighborhoods to other purposes. But in most instances manufactories will remove countryward to save money and to make money. The mechanics of the future will be largely drawn from the ranks of those who are now young children of mechanics, and probably from the children of immigrants. It is not difficult to predict which will be the more desirable workmen, the children of men employed in the city or those whose homes are in the country.

Considered from the standpoint of the manufacturer, the small city or the town, large or small, is desirable because of the question of permanent labor. The skilled men living in small places are, in the average, thrifty. They save their money, and, best of all, strive to buy homes of their own. Once the home is owned, labor unions usually do not attract, nor do agents of out of town concerns allure with offers of higher wages, a development of present manufacturing activity which is almost as baleful as a strike, so difficult is it to secure good men. One New England city lost 30 skilled machinists in one day last week because of the visit of the agent of a large electrical company which was willing to give advanced wages to secure high class men. It is safe to say that not one of the 30 owned his home, for had he owned it he would not have left his home city. The country avoids this evil better than the city. To secure labor made up of men contented with their surroundings is to secure one of the best assets of a manufacturer. No one can doubt that such labor is more often the product of the country, the small town or city, than of any metropolis.

### Reports to Nontechnical Clients.

The report of an advisory expert in any branch of modern industry is often of general interest because of its manner of treating the subject in hand. Individuality finds expression in the arrangement of arguments, exhibits and conclusions, however unfamiliar may be the details of the specialist's discussion. A study of the reports of consulting engineers, for example, brings one face to face with diversified methods of conveying the desired information to clients, and in some cases it is certain that the mental characteristics of the recipients carried but little weight in the preparation of the advice.

An important point should always be borne in mind in the production of a technical report, especially for the use of a nontechnical client. Results are the things which interest the business man, methods being of secondary consequence. Experienced engineers usually realize that the preparation of a report is a very different matter from the writing of a book, and in good practice the conclusions are always drawn up in such form that the client does not need to read the entire treatise in order to find out whether the consulting expert approves or disapproves of the proposition under consideration. Younger men often lead their employers or chiefs through a maze of technicalities only to leave them stranded at the end of many pages with little idea of the concise recommendations wanted.

The amount of detail desirable in a report depends

largely upon circumstances, but in every case the conclusions ought to be clearly and concisely set forth and separated from the statement of conditions, arguments and exhibits. If there is likely to be an exhaustive study of the problem by the client's own engineers, as in the case of a railroad company preparing to buy new equipment, the report may well contain an exhaustive discussion of the subject, with detailed estimates, maps, curves and other drawings. In other instances little more than the conclusions are needed, and there is a positive disadvantage in going very far into detail. Some engineers now consider the conclusion so important that they place it at the beginning of the report, binding the discussion and calculations as an appendix. There is no doubt that the general make-up of a report has large influence in establishing a young engineer's reputation, and a little care as to the essentially important points will certainly repay the trouble involved. Too many technical terms do not satisfy the nontechnical client, even in the conclusion paragraphs, and if there is any place where simple, plain English is worth while it is in the reports of engineers.

### The Chemist in the Brass Mill.

The cut and try, rule o' thumb and similar methods of manufacturing are rapidly disappearing, particularly from those industries in which the finished product is composed of several ingredients all of which have a marked effect upon its nature. It is no longer customary to try different combinations until one is obtained nearest approaching the desired result. This method has always been disagreeable to the manufacturer and costly to the consumer; it has been a waste of energy, material and capital, and the experience gained has been a negligible quantity.

Years ago this was all changed in the iron and steel industries, and the chemist now plays an indispensable part not only in the production of new metals but in preserving the standard of those accepted and in use. Steel of a certain physical characteristic is required; the chemist determines the proper percentage of the component parts to produce that steel; then follows the manipulation of the ingredients, and the desired result is obtained accurately and upon a commercial basis. Such being the case, it is passing strange that the chemist was so long barred from the brass mill. Even now in some establishments he is not considered an indispensable part of the equipment and his efficiency is hampered through lack of facilities. But in every instance where he has established a footing he has proved his worth in a wonderful manner and always on the right side of the balance sheet. The cut and try system has given place to one that permits the result to be known as soon as the work of the chemist has been finished.

The steel and brass chemists pursue their investigations along similar lines, but the objects they seek are very different. With remarkably few exceptions the steel mill is called upon for a metal having definite physical properties, the component parts being a matter of indifference to the consumer. This is also true of the brass mill in a large part of its work. When it deals with the maker of electrical machinery and apparatus, however, a new and exacting condition is introduced; the alloy then demanded must have specified physical characteristics as well as certain electrical qualities, both of these requirements being rigid in the extreme. Before the advent of the chemist the manufacturer did not know whether he could produce the article or not until he had

completed a more or less long series of experiments, and frequently he had to be satisfied with only a near approach to the specifications. This affected the work of the electrician, who was compelled to take what he could get and not what his plans called for.

Not long ago we were informed by the manager of a large brass mill that the electrical portion of his business was the most unsatisfactory and disagreeable until he introduced a fully equipped laboratory in charge of a competent chemist. He now takes with confidence work that would have been rejected before, or, if he had accepted the contract, would have required pouring after pouring, with a possible failure as the result. Now the specifications are handed to the chemist, his formula is sent to the foundry and the first cast generally produces the result sought. The foreman of the foundry occupies an executive position purely and solely; all his orders emanate from the laboratory. The chemist has become the dominating factor in that branch of the business. Soon after the appearance of the chemist an order was received for several thousand bars which must have an exact electrical resistance and be able to stand the great and unusual distortion they would be subjected to by the customer. Under former methods this order would have been rejected without hesitation as being altogether too severe in its requirements. Under the new *régime* those bars were made at the first attempt. Since then the chemist in that particular establishment has been a highly respected and valued functionary and is no longer treated as an interloper by the foundry force.

It is a serious mistake and one that is only too common to think that efficient work can come out of a laboratory consisting of a dark closet and half a dozen bottles. And yet more than one manager, while boasting the possession of a chemist, looks with troubled eye upon any requisition for supplies or needed improvements that the poor chemist may send him. He would rather spend dollars for machinery than pennies for acids. He knows his laboratory is a good talking card for his salesmen, but deep down in his soul he has doubts as to its appropriateness in a manufacturing concern.

### Steel vs. Cast Iron Lathe Gearing.

Builders of and dealers in engine lathes are divided as to the relative value of steel and cast iron gears for high power machines, such as rapid reduction lathes. Strength is an essential feature and steel is the stronger, but many consider cast iron strong enough for the most exacting service imposed by high speed. It is necessary since the introduction of the new tool steels to make cast iron gears heavier and of wider face than formerly. The dimensions are merely a matter of design. Gears of cast iron must be heavier than steel gears of equal strength, but it is claimed that steel gears are usually made stronger than the strain caused by cutting tools even when forced to their limit would call for. The advocates of cast iron go even farther in their criticism of steel by stating that it is dangerous to make the gearing too strong, unless a weak spot is left that will give way in case of an accidental sudden stoppage of the lathe. It is recommended that somewhere in the feed gearing a cast iron gear be inserted; then if the carriage should carelessly be left to run up against the headstock this gear would break, stopping the feed and saving the apron and other mechanism from serious injury.

This practice is quite common and gives rise to the query: "Why use steel at all, for if there is one cast

iron gear in the train the power that the lathe may exert is limited by the strength of this one part?" This does not apply to the pinions, which should be of steel to bring them up to the strength of the larger cast iron gears and also to improve the running, as steel and iron work together better than steel and steel or iron and iron. Of the two latter iron against iron will wear longer than steel against steel. Another point in favor of cast iron gears is that they can be made for about one-half to one-quarter the cost of steel gears.

Most machine tool manufacturers employ both materials for their gearing. Some customers demand steel gears throughout, though they are likely to find the single cast iron gear. The Pittsburgh district appears to have a predilection for steel in its engine lathes, but the majority of purchasers are satisfied with cast iron and leave the matter to the discretion of the makers.

Steel castings figure prominently in the general design of many modern lathes in parts concerning which there is no controversy. The gear question is young, for the modern high power lathe has been in use only a few years and so rapid has been its development, so quickly have radical improvements followed one another, that the time for intelligent comparison and criticism has only just arrived. On the basis of results from commercial experience, the choice of materials for gearing will soon be determined and some recognized standard of design will become established.

## CORRESPONDENCE.

### Steel Making in the Birmingham District.

*To the Editor:* In the past much has been written in regard to the possibilities of steel making in the Birmingham district. Metallurgists and promoters have rushed into print with well spun theories as to the possibilities of cost and production here of iron and steel making. It is not the intention of the writer to elaborate on the natural advantages of this particular district, as they are well known to metallurgists and manufacturers throughout the entire country.

With ore delivered at the furnace stockhouse at 75 cents per ton, \$6 pig iron is not only a possibility but an established fact, with a strong possibility of \$5.50 iron in the near future. This great reduction in cost has been brought about by the erection of modern furnaces and equipment. Taking as a basis the cost of pig iron as now produced by the most modern furnace in the South it is safe to predict that pig iron will in the next five years be produced at from \$5 to \$6 per ton throughout the entire Birmingham district.

While the production of pig iron has been going on for the past 25 or 30 years, with plants fairly modern, it is very unfortunate for the district that the only attempt to manufacture steel on a large scale was begun about six years ago. The plant then erected was the most defective in construction and equipment of any similar plant in the entire country. This being an admitted fact, the possible cost of producing a ton of finished steel cannot be arrived at definitely, but the writer is able to make the statement that this very defective plant has in the last year and a half earned net a profit of a round \$1,000,000. This amount was made after a market profit had been given to the blast furnace on all pig iron consumed by the steel plant. Had this plant been up to date and modernly equipped, as such plants are in the North, this amount could have been increased to \$2,000,000.

When due consideration is given to the fact that this plant has been operated under the most adverse conditions possible—making a product that has never in this country been continuously made in a basic open hearth furnace—it is at least fair to make the prediction that this district will in ten years be producing 1,000,000 tons of steel instead of 200,000 tons, as at present. Not

only has the plant been successful financially, but it has also succeeded in manufacturing steel rails that after almost three years' service have proved entirely satisfactory to the railroads and are conceded by experts and railroad engineers in general to be second to none made in this or any other country.

In conclusion the writer does not hesitate to state that the Birmingham district can with modern plants and equipment manufacture steel at not only a good profit but at an enormous profit. The cost of production will be low enough to insure to the district the entire trade of the South and Southwest for all time.

BIRMINGHAM.

BIRMINGHAM, ALA., September 27, 1905.

### The American Street Railway Convention.

The further meetings of the American Street Railway convention at Philadelphia, Pa., during the week of September 25 to 30, which were held since our report in *The Iron Age* of September 28, proved of particular interest in view of the proposed reorganization of the association, which was carried out upon the lines laid down by the committee having this matter in charge. The name of the association was changed from the American Street Railway Association to the American Street and Interurban Railway Association. Under its constitution and by-laws this organization will grant charters to the various affiliated associations organized with its approval to investigate technical matters connected with street and interurban railway construction and operation.

W. Caryl Ely, Buffalo, N. Y., president of the old association, was elected as the first president of the reorganized association; John I. Beggs, Milwaukee, Wis., first vice-president; Calvin G. Goodrich, Minneapolis, Minn., second vice-president, and James F. Shaw, Boston, Mass., third vice-president. Prof. B. V. Swinson of Wisconsin University was elected secretary and treasurer, and will maintain headquarters in New York City.

The annual banquet, held at the Bellevue Stratford on the evening of the 28th, was most successful. John B. Parsons acted as toastmaster, and addresses were made by W. Caryl Ely, president of the association; John Weaver, Mayor of Philadelphia; G. Tate Blackstock, K. C., of Montreal; John I. Beggs, Milwaukee, Wis., and James Rawle of Philadelphia.

The Street Railway Accountants' Association held its meeting after the adjournment of the American Street and Interurban Railway Association, and after routine business elected the following officers for the ensuing year: President W. P. Brockway, Yonkers, N. Y.; first vice-president, Robert N. Wallis, Fitchburg, Mass.; second vice-president, H. A. Ferrandau, New Orleans, La., and secretary and treasurer, Elmer M. White, Birmingham, Ala. The exhibition of the Manufacturers' Association was continued until Saturday evening, September 30, and was generally considered to be the most attractive and instructive that had ever been made.

### The Pittsburgh Foundrymen's Association.

The regular monthly meeting of this organization was held at 410 Penn avenue, Pittsburgh, on Monday evening, October 2. W. H. McFadden, president, was in the chair and F. H. Zimmers was secretary. About 25 of the leading foundry interests were represented. In addition to the regular routine business papers were read by Mr. Durkelspiel of the Partamol Company, New York City, on "Partamol as a Material for Parting," and by A. W. Slocum on "Recommended Specifications for Cast Iron." The election of officers for the ensuing year resulted as follows: D. B. Fuller, president; Henry J. Spilker, vice-president, and F. H. Zimmers, secretary and treasurer. An Executive Committee was elected as follows: W. H. McFadden, S. D. Sleeth, J. S. McCormick, John Phillips and G. C. Shade. The Programme Committee will consist of E. D. Frohman, A. W. Slocum and H. E. Field. W. H. McFadden, the retiring president, was accorded a vote of thanks for his services during the past year upon surrendering the chair to his suc-



cessor, D. B. Fuller of the Westinghouse Electric & Mfg. Company. F. H. Zimmers, re-elected secretary, will also be treasurer of the association for the coming year.

### PERSONAL.

W. H. Douglas, New York sales agent of the Western Tube Company, Kewanee, Ill., has resigned, his resignation taking effect October 1. He is succeeded by F. E. Olin, formerly assistant manager of sales at the New York office.

W. J. Fairbairn has reconsidered his resignation as secretary of the Milwaukee Metal Trades Association, Milwaukee, Wis., and at the unanimous request of the Board of Directors will continue in that capacity.

John C. Bradley became general manager of the Denver Chemical Mfg. Company, New York, on October 1. For eight years Mr. Bradley has been superintendent of the Pratt & Letchworth Company, Buffalo. His resignation of that position was due to the fact that he was recently made executor of an estate holding important interests in the company of which he now becomes general manager.

W. M. Douglass, assistant to the general superintendent of the American Steel & Wire Company, with headquarters at Allentown, Pa., has severed his connection with that company. He emphatically denies the report that he is organizing an independent wire company. Mr. Douglass has been engaged in the wire trade for many years, having superintended the construction of the Beaver Falls and Allentown plants, which were taken over by the American Steel & Wire Company.

J. David Cubbage, assistant superintendent of the Carle blast furnaces of the Carnegie Steel Company, Pittsburgh, has resigned, and will accept a similar position at the blast furnaces of the Illinois Steel Company at South Chicago.

J. M. Shaw has resigned as auditor of the National Tube Company and Shelby Steel Tube Company, Pittsburgh, and will engage in business on his own account. Mr. Shaw was presented by employees of the auditing department with a gold watch and a pair of cuff links.

T. J. Shaffer, the retiring president of the Amalgamated Association, was tendered a banquet at Youngstown, Ohio, September 30, by officers and members of the East Youngstown Lodge, and was presented with a gold charm.

Isaac W. Frank, president of the United Engineering & Foundry Company, Pittsburgh, has returned from a three months' trip to Europe.

Frank Hooker Alfred, until recently chief engineer of the Père Marquette Railroad, is now associated with the Canadian White Company, Montreal, as general manager.

President August Ziesing of the American Bridge Company, Pittsburgh, Pa., announces the following appointments: Emil Gerber, in addition to his duties as assistant to the president, will assume the duties of operating manager of the Pittsburgh division, covering the Ambridge, Canton, Shiffler and Toledo plants, with office in Frick Building, Pittsburgh, Pa.; R. J. Davis is reappointed manager of the Elmira and Brooklyn plants, and will assume the duties of operating manager of the Eastern division, covering the Athens, Berlin, Edge Moor, Pencoyd and Trenton plants, with office at Fifteenth and Chestnut streets, Philadelphia, Pa.; E. A. Smith will assume the duties of operating manager of the Western division, covering the American, Detroit, Lafayette, Lassaig, Milwaukee and Minneapolis plants, with office in Monadnock Block, Chicago, Ill.

Alfred Ernst has opened an engineering office at 1513 Rockefeller Building, Cleveland, Ohio, and will pay particular attention to designing and erecting blast furnaces, steel works and rolling mills and coal and coke handling machinery. For the past five years Mr. Ernst has been on the engineering staff of the Wellman-Seaver-Morgan Company, Cleveland, having in hand blast furnace, steel works and rolling mill construction. Among other plants he designed the blast furnaces and rail mill for

the Lake Superior Corporation at Sault Ste. Marie, Ont. Previous to his connection at Cleveland Mr. Ernst was chief engineer of the Lackawanna Steel Company and developed the original layout for the new plant at Buffalo, N. Y.

Robert McF. Doble, consulting engineer of the Abner Doble Company, San Francisco, has returned from a trip of several months through the Sierra Madre Mountains on the west coast of Mexico and also in Colorado, where he was engaged in making examinations of several important hydroelectric long distance power projects.

F. F. Fitzpatrick, who has been connected with the Railway Steel Spring Company since its organization, has been elected a vice-president.

W. G. Williams, who for the past ten years has been connected with the Montour Rolling Mill of the Reading Iron Company, at Danville, Pa., has resigned and will take a needed rest before engaging in other business.

Kenneth B. Thornton has been appointed operating engineer of the Canadian White Company, Montreal. He is a past president of the Canadian Electric Association.

Arthur E. Corbin, who has been secretary of the Connecticut Valley Labor Bureau, at Springfield, Mass., through its development period, has resigned to become connected with the J. Stevens Arms & Tool Company, Chicopee Falls, Mass. His successor at Springfield is Arthur F. Bassett, who has been secretary of the Manufacturers' Bureau at Hartford, Conn., for the past nine months.

James E. Jopling, mining engineer of the Cleveland-Cliffs Iron Company, Ishpeming, Mich., has sailed for Europe for a five months' trip in which he will visit various mining districts to obtain information regarding methods of underground operations.

J. H. Plummer, president of the Dominion Iron & Steel Company, Sydney, N. S., has been given a six months' leave of absence by the directors and will go abroad to recuperate from a serious illness.

Benjamin F. Heaton has resigned as one of the receivers of the Fort Wayne Iron & Steel Works, Fort Wayne, Ind., and Simpson C. Leonard has been appointed in his place. Mr. Heaton was attorney for one of the largest creditors. Mr. Leonard is connected with the American Car & Foundry Company.

Richard D. Beatty of Westinghouse Electric & Mfg. Company has resigned to become general manager of the Eastern Ohio Traction Company, Cleveland, Ohio.

The prizes offered by *Engineering News* and the *Cement Age* of New York for the best papers on "The Manufacture of Concrete Blocks and Their Use in Building Construction" have just been awarded by the jury, which was composed of Robert W. Lesley, past president of the American Cement Manufacturers' Association; Richard L. Humphrey, president of the Cement Users' Association, and Prof. Edgar Marburg, secretary of the American Society for Testing Materials. The first prize of \$250 was won by H. H. Rice, Denver, Col., secretary of the American Hydraulic Stone Company. The second prize of \$100 was given to Wm. M. Torrance, New York City, assistant engineer in charge of concrete steel design for the Hudson Tunnel companies.

Car movements at Birmingham, Ala., last month show a total of 63,000 cars, an increase over the same month last year of 10,000 cars.

The Adrian Steel Casting Company, Adrian, Mich., incorporated with a capital stock of \$30,000, and which has been under the present management since July 1, is running its plant to full capacity on light crucible steel castings. The plant is equipped with a six-hole 24-pot furnace and has a capacity of 3 to 4 tons per day. The company is handling orders from a great many of the leading automobile, gas engine and railroad supply manufacturers and makers of light machinery and is stated to be giving excellent satisfaction in the quality of the work it is turning out. G. B. M. Seager is president; E. N. Smith, treasurer, and B. M. Gardner, secretary and general manager.

## NEWS OF THE WORKS.

## Iron and Steel.

The Flagler Iron & Steel Company, Chicago, Ill., is making rapid progress with the construction of its new plant at Chicago Highlands and expects to be making iron and steel pipe and tubes before the first of the year. The buildings thus far completed include a mill building 110 x 541 feet, 31 feet high at center; one building 43 x 236 feet and one building 40 x 110 feet. All these buildings are of steel construction, built on stone and brick foundations. The engines, dynamos and furnaces have been installed and some of the other machinery is now being put in. The plant is to have a capacity of 300 tons per day. Within another year the company intends to build rolling mills and a blast furnace. H. K. Flagler is president and W. P. Dickinson is vice-president and treasurer.

H. W. Cole, treasurer of the Crown Drilling Machine Company, Akron, Ohio, has purchased the plant of the Independent Rolling Mill Company at Cuyahoga Falls, Ohio, for himself and others. The purchase price is given as \$26,000, while the original cost of the plant is said to have been upward of \$200,000. The plant has been idle for 18 months and was formerly owned by Wilkoff Brothers of Youngstown and other parties. The plant may be operated on its present site, but it is probable the machinery will be moved to some other point.

The Alabama & Georgia Iron Company, Cedartown, Ga., maker of warm blast charcoal iron, will blow in its furnace early in November.

Building permits have been issued to the American Tube & Stamping Company, Bridgeport, Conn., for the additions to its plant already mentioned in these columns. The enlargements comprise an addition 16 x 200 feet to the billet mill, an addition 20 x 48 feet to the shear shop and an addition 43 x 77 feet to the boiler house. They will be of steel and concrete construction.

The officers and directors of the Lackawanna Steel Company inspected the plant at Buffalo, N. Y., last week. The output of the various finishing mills started in the past year has been steadily increasing and is now at high point.

An ore bank recently discovered on the property of the Red River Furnace Company at Clarksville, Tenn., has been estimated to contain at least 1,000,000 tons of iron ore.

The Altoona Iron Company, Altoona, Pa., at its recent annual meeting held on September 19, decided to make some minor improvements and repairs to its plant. Directors were elected as follows: John P. Levan, George W. Strattan, Dr. William M. Findley, H. K. McCauley, S. M. Griffith and Robert Smiley of Altoona and Frank S. Fullerton of Philadelphia, Pa. John P. Levan was elected president and H. K. McCauley, secretary and treasurer.

Regarding reports that the American Sheet & Tin Plate Company had decided to add a number of hot mills and make other large additions to equipment at its Struthers works, Struthers, Ohio, we are officially advised that this concern has reached no definite decision regarding improvements or additions to equipment at this plant. The continuous sheet plant at the South Sharon works, South Sharon, Pa., where the Bray process is used, has resumed operations after being shut down several weeks to allow some heavy machinery to be installed.

The rail mill of the Republic Iron & Steel Company, at Youngstown, Ohio, will be put on billets this week. The company has some urgent orders to fill for billets and will run the plant on this product until these orders have been filled.

It is understood that the furnace of the Eagle Iron Company of Chattanooga, at Attalla, Ala., will resume making charcoal iron December 1, after a long idleness, the charcoal market being brisk at present.

The new furnace of the Woodward Iron Company, Woodward, Ala., is said to be making a daily record of 300 tons.

One of the furnaces at Oxmoor, Ala., has resumed after a long idleness, with the second at that place to start again soon after being relined.

The Union Rail Company, Huntington, W. Va., has leased its mills to the Huntington Rail Mfg. Company, and operations will be resumed immediately, manufacturing light steel rails from 16 to 40 pounds. Max Rosenbaum of Pittsburgh, Pa., is president; A. F. Baumgarten, vice-president and general manager, and L. A. Pollock, secretary and treasurer.

The National works of the American Sheet & Tin Plate Company, at Monessen, Pa., which has been idle for nearly four months, will partially resume operations on Monday, October 16. Only 10 of the 25 hot mills in this plant will be started on this date, but the other 15 are expected to be started late in October or early in November.

## General Machinery.

The plant of the American Road Roller Company at Groton, N. Y., which was erected about four years ago by the Conger Mfg. Company, has been purchased at trustees' sale by J. B. Tuck, who has incorporated the Monarch Road Roller Company with a capital stock of \$250,000, with the intention of putting the plant in operation within the next 30 days to manufacture

road rollers, traction engines, street sweepers, &c. The plant is located on a 12-acre site and consists of a boiler shop, forge shop, foundry, machine shop, power house, stockroom, paint shop, wood shop and warehouse, with an aggregate floor space of 100,000 square feet.

The Baltimore & Ohio Railroad has let a contract to P. Farrell of Cincinnati for improvements of shops and terminals at Lorain, Ohio, to cost about \$150,000 and work will be started at once. The contract consists of the erection of a ten-stall engine house, an 80-foot turntable and pit, a depressed double track ash pit and oilhouse 30 x 55 feet, a trainmen's building, a 350-ton coal tippie, a sandhouse, machine shop and blacksmith shop.

The Wilmarth & Morman Company, Grand Rapids, Mich., in order to secure much needed additional room, has leased property at Canal and Leonard streets, upon which there is a two-story frame building 80 x 100 feet. The company is now altering the building to suit its purposes and transforming it into a three-story structure, which will give the company twice as much room as it has at present. New machinery is to be installed and the building completely equipped. There is a vacant lot 60 x 100 feet in the rear of the building which will doubtless be improved in the near future. The company is very busy making new Yankee drill grinders, Nelson loose pulleys and other specialties.

The Stearns Company, Erie, Pa., which has just been organized with a capital stock of \$100,000, has purchased the drawings, patterns, much of the raw material and a number of the tools of the Stearns Mfg. Company and has secured the plant of the Globe Iron Works. A new machine shop has been added to this plant and the new company starts out with a completely equipped works. The company will manufacture saw mills, band, gang and circular, with all auxiliary machinery, also the Heisler geared locomotive and the United States brick press. F. F. Curtze is president; John Walton, vice-president; G. L. Swabb, secretary, A. A. Claus, treasurer, and H. R. Barnhurse, manager of sales. Messrs. Walton, Swabb and Barnhurst were formerly connected with the Stearns Mfg. Company.

The recent fire at the plant of the Featherstone Foundry & Machine Company, Chicago, Ill., simply destroyed the upper portion of its pattern loft, and the fire was hardly over before arrangements were made to repair the damage. The first heat was taken off in the foundry the afternoon of the day the fire occurred, and the blacksmith shop and portions of the machine shop were started again the following morning. Work has been resumed in the pattern shop and the entire plant is now in full operation. The fire interfered but slightly with the operation of the plant and the company is prepared to handle as promptly as heretofore orders for dipper dredges, ice making machines, refrigerating machinery, ammonia fittings, gray iron castings, &c. The ammonia fitting department was recently transferred to its Maywood plant, the capacity of which is being increased about 300 per cent. The company has on hand at that plant a large stock of ammonia fittings, valves, &c.

The Houchin Mfg. Company, Atlanta, Ga., has changed its location from Garrett street to a building of three stories at 165-167 South Forsyth street, by which its facilities for manufacturing are trebled. New planers, radial drills and milling machine have been added to the equipment. The main lines of manufacture are die presses of all kinds, paper bag and stereotype machinery, and a special printing press for roll and paper bag work. Another product of the company is brass handles of every description, which it makes mainly so as to be able to test every individual die machine manufactured.

The Fulton Foundry & Machine Company, Atlanta, Ga., has purchased a large tract of land on the Georgia Railroad, just outside the city limits, on which it is erecting new works. The foundry and machine shop are each 120 x 200 feet, and the pattern shop and storeroom are in one building of two stories, 80 x 100 feet. The equipment will be the most modern, including traveling cranes. The company has yet to purchase part of the necessary machinery. Intention is to build a heavy class of work. Cost of the works is said to be \$125,000.

The stock of the F. R. Patch Mfg. Company, Rutland, Vt., held by the Joel B. Harris estate has been sold by the trustees to George T. and Newman K. Chaffee, the transfer comprising nearly one-half of the company's capital stock. There will be no change in the management, but the personnel of the directory has been altered by the election of William La Bombard, Leslie Crane and T. A. Reardon as directors for the balance of the year, succeeding Charles P. Harris, William A. Harris and Charles A. Bowles, trustees of the Harris estate. The company manufactures stone working machinery.

A. W. Schirring, formerly with Wm. A. Reade & Co., Cleveland, Ohio, has formed the Crescent Machinery Company, with offices at 1535 Williamson Building. He will deal in second-hand machine tools exclusively and will have a warehouse for storing and handling tools.

T. D. Dixon of McKeesport, Pa., is at the head of a company which contemplates putting in machine shops and foundry at St. John, Kan. Mr. Dixon has been in St. John for the



past week and has made the necessary arrangements. Mr. Dixon purchased for his company 5 or 6 acres of ground from Wm. Glasscock. Mr. Dixon stated that work would begin soon on some of the buildings and that the machinery would be shipped during the winter, and that early next spring the main buildings would be erected and the company expected to be ready for business by June of next year.

The Bosworth & Holding Company, Cleveland, Ohio, dealer in new and second-hand machine tools and electrical equipment, has been succeeded by the Bosworth, Dilley & Holding Company, and offices have been opened at 723 Rockefeller Building.

The Erie Railroad is erecting a modern cold storage plant at East Buffalo of steel and concrete construction with a capacity of 20,000 tons. The plant will be equipped with the Robins conveying system, which will be electrically operated.

The Wabash Foundry & Machine Company has been incorporated at Wabash, Ind., with \$25,000 capital stock. The directors are Thos. McNamee, Thos. W. King and Jas. L. Robertson.

#### Power Plant Equipment.

The Adolph Leiteit Iron Company, Grand Rapids, Mich., is building an addition to its boiler shop.

The Greendale Gas Engine Company, Worcester, Mass., has been incorporated under Massachusetts laws with a capital stock of \$15,000, to carry on a business which has been established several years. The incorporation carries with it an increase in working capital, which will permit the company to extend its business. The officers are: President, Harris Burlingame; treasurer, S. F. Burlingame; clerk, C. E. Burlingame; directors, these officers and L. J. Terrill.

The Central Heat & Power Company, Rockford, Ill., is installing two 350 horse-power Heine boilers, and at a meeting of the stockholders of the company, held September 19, it was decided to add a 300-kw. engine and generator, though this will not be done until next spring.

The Mena Light, Heat & Power Company, Mena Ark., has been incorporated with a capital stock of \$250,000 for the purpose of operating a heating and lighting plant in addition to cold storage and other utilities. Francis R. Hoyt, Francis M. Reeves and Wilson D. Hoyt are the incorporators.

The Ohio Cultivator Company, Bellevue, Ohio, builder of agricultural implements, has erected a new engine room and has installed two 60 horse-power vertical engines, with 35-kw. generators, direct connected. The concern will also put in several motors to furnish power and will install its own electric lighting plant.

L. E. Safford, manager of the Pittsburgh office of Clark Brothers & Co., of Belmont County, N. Y., has secured a contract from the Pittsburgh & Allegheny Valley Street Railway Company for two 600 horse-power Bogart gas engines and one 250 horse-power gas engine, all direct connected to two large electric generators. This equipment will be installed in a large power plant to be erected by the street railway line at Leechburg, Pa., and contracts for a large amount of other equipment to be installed in this plant will be placed in a short time. The Pittsburgh & Allegheny Valley Street Railway Company is one of the traction lines recently chartered and will operate electric street cars between Leechburg, New Kensington and Apollo, Pa.

The R. I. Cole Mfg. Company, Newman, Ga., reports a large increase in the demand for engines, boilers and other work of that class. M. F. Cole, the general manager, states that the delivery of boilers from its shops during 1900 was 98, while the assured business for 1905 is not less than 600, the horse-power capacity being much greater than during the former period.

The Oberlin Gas & Electric Company, Oberlin, Ohio, has been taken out of the receivers' hands and refinanced by J. C. Hill of Elyria, A. E. Hay of Oberlin and others. The company will install a heating plant and will make important improvements to the lighting plant.

The Citizens' Water & Light Company has been incorporated at Greenwood, Ind., with \$25,000 capital stock. The directors are David E. Demott, John W. Henderson and James A. Craig.

The A. P. Karstad Boiler Company has been incorporated at Terre Haute, Ind., with \$10,000 capital stock, by Andrew P. Karstad, Chas. Brumfield and others.

#### Foundries.

The Birmingham Steel & Iron Company, Birmingham, Ala., has just finished two cylinders for the new mills being erected by the Jefferson Powder Mill Company, Birmingham. It is also having quite a run on steel castings for sugar mills in the Southern States and Cuba.

The Andrew Terry Company, Terryville, Conn., manufacturer of malleable iron castings, is completing a brick power house, 30 x 35 feet, in which is being installed a 100 horse-power boiler from the Bigelow Company, New Haven, Conn. The company has two Beggs engines of 25 horse-power each and a smaller engine, in addition to its fine water-power.

The pattern shops of the plant of Mackintosh, Hemphill &

Co., Pittsburgh, were destroyed by fire on Sunday, October 1. Some very valuable patterns were destroyed and the loss is given as upward of \$200,000. The fire will not interfere with operations of the foundry and machine shops and it is stated the destroyed patterns can be replaced.

The Dimmick Pipe Company, Birmingham, Ala., now has its new shop in full operation and is turning out 300 tons of pipe per day from 3 to 60 inches in diameter.

The plant of the Reading Foundry Company, Reading, Pa., has been sold to M. J. Drummond & Co., 182 Broadway, New York. The latter company has not decided as yet just what is to be done with the plant, but it is said that it may be dismantled and moved elsewhere.

#### Bridges and Buildings.

The Indianapolis Southern Railway will build near Bloomfield, Ind., one of the longest and highest viaducts in the United States. It will consist of two 50-foot approach spans at one end and two 60-foot spans at the other end, with a main bridging of 17 75-foot spans and 18 tower spans, each 40 feet long and varying in height from 65 to 124 feet, making the total length of the viaduct 2215 feet. The steel for this bridge is being manufactured at the Detroit plant of the American Bridge Company and will be erected by the railway company's forces.

The Oscar Daniels Company, Chicago, has the steel contract for the new shops, Nos. 4, 5 and 6, of the Allis-Chalmers Company at Milwaukee, Wis.

The contemplated extension of the power house at the New Wilmington shop has brought out an inquiry by the purchasing department, Pennsylvania Railroad Company, for the steel work for this point, and this, together with the superstructure for single span four-track bridge and deck plate girder bridge of three spans for three tracks, which are required by the Pennsylvania Railroad and Philadelphia & Erie divisions, respectively, are practically the only new inquiries which are being made. There will be required about 31,100 square feet of radiating surface, dividing into 36 units, for the new No. 3 erecting shop at Altoona, and the purchasing agent is also making inquiries for this at the present time.

Plans and specifications for the construction of four new bridges for the city of Philadelphia have been completed and bids will be asked for their construction by the Bureau of Surveys. These include a new bridge over the Wissahickon Creek at Allen's lane and a bridge on Wyoming avenue over the tracks of the Philadelphia & Newton Railroad; another is to cross the Pennsylvania Railroad tracks at Twenty-fifth street, while the fourth is to cross the tracks of the Pennsylvania Railroad, New York division, at North Front street.

#### Fires.

The plant of the Missouri Valley Casket Company, Kansas City, Mo., was burned last week. The loss is placed at \$50,000.

The recent fire at the foundry and machine shop of J. G. Newbury, Coxsackie, N. Y., did \$4000 damage.

The United States Rapid Fire Gun & Ammunition Company suffered a loss of \$3000 by a fire which destroyed a building containing the hardening department and annealing furnaces.

#### Hardware.

J. Wiss & Sons Company, Newark, N. J., is at present building a four-story addition to its factory on Littleton avenue. This will make the frontage of the main building 255 feet and give 6840 square feet of additional room. With the five one and two story extensions in the rear this addition is expected to provide enough space to meet the increasing demand for Wiss shears, scissors, razors and tinners' snips.

Oscar M. Flather of the Mark Flather Planer Company, Nashua, N. H., has purchased the interest in the John B. Grover File Company, Nashua, owned by the estate of the late George W. Campbell.

The Crescent Handle Works, Evansville, Ind., has just completed another warehouse, built especially for storing agricultural tool handles, cant hooks and extra handles for same. It has also remodeled its plant so that handles will be turned out more promptly and to better advantage. In addition it has two plants in good timber sections, furnishing ash squares and lumber, and altogether it is in position to handle a much larger volume of business than last year.

John McCrory & Sons, manufacturers of wire nails and special wires, have removed their plant from Allegheny, Pa., to Ellwood City, Pa., in the buildings formerly occupied by the Union Chain & Forge Company. The capacity has been increased and the new location affords excellent shipping facilities, the plant having direct connection with the Baltimore & Ohio, Pittsburgh & Lake Erie and Buffalo, Rochester & Pittsburgh railroads. John McCrory of this company was for many years connected with the Oliver Wire Company, Pittsburgh.

The Plymouth Cordage Company, North Plymouth, Mass., has decided to locate its Canadian plant at Welland, Ontario, where 200 acres have been purchased at the junction of the Welland



Canal and Michigan Central and Grand Trunk railroads. Contracts for the buildings have been awarded. The main building will be 700 feet long by 110 feet in width, and two stories in high. The other buildings are a storehouse, 600 feet long by 60 feet wide; a tower house, 300 feet long by 50 feet wide; a machine shop, 150 feet long by 50 feet wide; a picker building, 150 feet long by 50 feet wide; a large office building, and several smaller buildings. All will be built at once. The power will be electricity, transmitted from Niagara Falls.

The Hussey Farm Tool Company, Indianapolis, Ind., has been incorporated with \$100,000 capital stock by Ray W. Hussey, Joseph D. Hyde and Tilman K. Smith.

#### Miscellaneous.

The George Delker Company, Henderson, Ky., manufacturer of vehicles, has prepared plans for the erection of another story to the ell of its main building. The company contemplates further enlargement in the near future.

The Armac Motor Company, formerly of St. Paul, Minn., has reincorporated under the laws of Illinois, retaining the same firm name, and is now moving into a new plant in Chicago at the corner of Sheldon and Carroll avenues. The company will continue the manufacture of the Armac motors and motor cycles and will add to its line the making of a side carriage attachment, marine motors and motor and motor cycle accessories. E. W. Keller is president of the company.

A deal is said to be under way between the American Car & Foundry Company and the Frisco Railroad system for the establishment of a car building plant by the former company on the line of the latter road. It is thought likely that this industry will be located at North Birmingham, Ala.

The National Casket Company, New Haven, Conn., is to erect an addition to its factory 36 x 50 feet and one story.

The Watson-Ordinance Company, Arrott Power Building, Pittsburgh, has secured a site near Oakmont, Pa., about ten miles from Pittsburgh, and will build a factory for the manufacture of caps to explode large field and naval pieces. The concern has large orders for these caps from Germany, France and other countries and requires more capacity to make them.

The Driggs-Seabury Ordnance Corporation, Sharon, Pa., has received a contract from the Government for 176 rapid firing guns of different sizes.

The Lackawanna Steel Company has started part of its coke oven plant at the Colebrook furnaces, Lebanon, Pa. It had been idle for some time.

The Voelke Seamless Float Company, Tipton, Ind., manufacturer of seamless copper floats, intends to erect a new plant in the spring. The plans call for a main brick building 40 x 70 feet, two stories high, with an engine room 20 x 40 feet. The company at present has a capacity of 200 floats per day.

The High House Coal & Coke Company, Uniontown, Pa., has voted to increase its capital from \$30,000 to \$75,000 and will build more coke ovens.

The Hinchon Mfg. Company, Ellwood City, Pa., has applied for a Delaware charter with a capital of \$100,000. The new concern will manufacture antifriction metals and hard rubber for insulating purposes. The company has purchased several buildings from the Glen Mfg. Company and is installing its equipment as fast as possible. As soon as the charter is granted a meeting of the incorporators will be held and officers elected. The incorporators are F. B. Hinchon, Lewis Rosser and E. R. Ramsey.

The American Car & Foundry Company has recently made improvements and additions to its plant at Huntington, W. Va., which enables this concern to build cars of steel construction at that plant.

The Wason Mfg. Company, Springfield, Mass., manufacturer of cars, has secured an order for 30 30-ton electric cars from the Havana Central Railway Company, to be used on the lines of the company in Havana, Cuba. The cars will carry 50 passengers each and are equipped for four motors geared for a speed of 40 miles an hour.

The Norwich Belt Mfg. Company, Norwich, Conn., has increased its capital stock from \$200,000 to \$300,000, the additional capital being made necessary by the increase in the company's business, principally from the demand for the combination tanned belting, which is a feature of the line.

The Southern Brass Works, Atlanta, Ga., was incorporated August 5 for the manufacture of a general line of plumbers' supplies and electric line material. It will also make brass, bronze and aluminum castings and be open to manufacture specialties on estimate for outside parties. The president and general manager is M. R. Berry; secretary and treasurer, F. R. Berry, and superintendent, James Hulme.

The Tritt Electric Company, manufacturer of automobile and gas engine specialties, has removed from South Bend to Union City, Ind., where additional investments in the stock of the company permitted more extensive operations. The company is occupying the three-story building formerly tenanted by the Union Automobile Company.

The Oliver Trackless Car Company, South Bend, Ind., has been organized with a capital stock of \$50,000, by Andrew J.

Diermeyer, Geo. W. Schock, John N. Lyster and Fred. Wm. Oliver, to manufacture cars, trucks, automobiles, engines, motors, &c. The company is about to establish a plant in Canada and Mr. Oliver is in the Dominion for the purpose of securing a location.

The Schmidt-Wilckes Electric Company, Hoboken, N. J., has incorporated for the manufacture of telephones, switchboards and other high grade electric supplies. The company has not yet decided whether it will build a new plant. Lambert Schmidt is president; Felix Wilckes, vice-president; Ferdinand Wilckes, secretary and treasurer. These officers, with Prof. Reginald A. Fessenden and E. Van Berlo, constitute the Board of Directors.

Adell Bros. Mfg. Company, Orange, Mass., advises us that it has recently equipped its plant so that it is in a position to do sheet metal stamping, tool and experimental work, to which it will give prompt attention.

The old firm of Sidney Shepard & Co., manufacturers of sheet metal goods and enameled ware, at Buffalo, N. Y., is to be converted into a joint stock company with a capitalization of \$1,500,000, one-half of which is to be preferred stock and one-half common stock.

The Lackawanna Steel Company is to make its own coke hereafter and will erect 20 batteries of coke ovens at its Buffalo plant for the purpose. It is expected that 12 of the coking batteries which are now in course of construction will be in operation by the beginning of the coming year and the remaining eight batteries shortly thereafter. The new blooming mill at the company's plant will be put in operation in November.

The Westinghouse Brake Company, London, which is the British end of the Westinghouse Air Brake Company, Pittsburgh, has acquired the exclusive rights under the Morse chain patents to manufacture and sell the Morse rocker joint silent high speed chain in Great Britain and on the Continent of Europe. The chain is made in this country by the Morse Chain Company, Trumansburg, N. Y., from which company the Westinghouse Company purchased the European rights. A plant is to be built at Kings Cross, North London, to manufacture the chains.

The Buffalo Sheet Metal & Mfg. Company, Guthrie, O. T., has been incorporated with a capital stock of \$100,000. The directors are: George W. Stilson, Buffalo, N. Y.; E. E. Frutchy, Hornellsville, N. Y.; Geo. M. Kellogg, Hornellsville, N. Y.; G. V. Pattison and H. W. Pentecost, Guthrie, O. T.

The U. S. Furnace Company, Oklahoma City, O. T., has been incorporated with a capital stock of \$500,000, by James Murphy, Guy L. White and W. A. Rogers of Chicago and A. J. McMahan and L. W. McRee of Oklahoma City.

P. M. Jewett, Carthage, Mo., has purchased a half interest in the wrench invented by William E. Etter of Bowers Mills. The wrench, which is designed to take taps off or put them on the rim of a buggy wheel, it is claimed will remove the taps from the four wheels of a vehicle while they are being removed from one by the old method. Mr. Jewett states that it is the expectation to begin making the wrenches at once and that a factory employing six men will be installed at Carthage or at Larussell, Mo., probably at the latter place.

The Barnes Gear Company, Oswego, N. Y., recently incorporated, has leased the Vulcan Iron Works and will manufacture various automobile parts, the main product being the Barnes adjustable steering gear, in which all lost motion in the steering wheel is taken up. Charles O. Barnes is president; Thomas Moore, vice-president, and Charles A. Bently, secretary and treasurer.

The Monarch Metallic Fence Post Company has been incorporated at Crawfordsville, Ind., with \$30,000 capital stock. The directors are G. B. Luckett, B. T. Merrill, Frank C. Evans, C. W. Stroh and Wm. M. White.

The Penn-American Plate Glass Company, Alexandria, Ind., will spend \$600,000 on enlarging and improving the plant. The company has made a loan of the amount for that purpose.

The contract for the construction of the Vincennes, West Baden & Louisville Traction Company's road in Indiana has been let to Lewis Metesser of New Orleans. The contract calls for 75-pound rails. The power house will cost \$300,000. T. H. Adams, Vincennes, Ind., is president of the company; F. E. Champelle, secretary.

The Wooley Smokeless Furnace Company has been organized with a capital of \$250,000 to market a smokeless furnace. The company will probably have its product manufactured for a time at least and inquiries can be addressed to 237 Broadway, New York, where William J. Zirkel, one of the directors, has an office. The other incorporators are Orestes U. Dean, John W. Young, Howard Goulding, William S. Andrews, Robert C. Easton and Laurie L. Levey.

The American Post Company has been incorporated at Bloomfield, Ind., with \$40,000 capital stock. The company will manufacture metal fence posts. The directors are John H. Cravens, P. J. Harrah and C. E. Henderson.

## The Iron and Metal Trades

While the largest producers of Iron and Steel have been preparing for some time for the heavy consumption which they have anticipated, the buying movement has come somewhat earlier than they expected and has been of surprising volume. As an indication of what has been happening we may note that the September sales of the United States Steel Corporation constituted a record and have been double its capacity.

The most interesting development of the past week has been the rush to buy Furnace Coke for 1906. A number of the large Steel companies have closed very important contracts and the Pig Iron makers generally have hastened to cover. The price has advanced to \$2.55 to \$2.65 at ovens for strictly Connellsville Coke, which is about \$1 above the price at which Coke was sold in the spring.

This means a very serious addition to the cost of production of Pig Iron and accounts for the attitude which makers are assuming. They are putting up prices and are chary of taking business beyond the first quarter of 1906. Then, too, the feeling is growing that speculative buying on the part of consumers, of which there are some indications, should be discouraged.

Back of all the excitement of the past few weeks is the fact that the general foundry trade, which in point of activity has so long lagged behind the Steel trade, is now feeling the impulse of quickened consumption.

The large Steel interests are outspoken in their determination to prevent a runaway market, and in this the makers of Pig Iron join, although they insist that prices must reach a level which will compensate them for the higher cost of manufacture. As prices now stand in this country and abroad there is no chance of any imports of Pig Iron outside of metal brought in in order to manufacture for export.

Steel is very scarce in all parts of the country. The Rail trade has quieted down a little. It is understood that a small part of the New York Central order has been placed.

Additional contracts for Plates and Shapes for ships to be built on the lakes have been booked and more work of that character is coming up. It is generally believed that we are on the eve of an advance in the price of Plates.

The pressure for Structural Material continues. This lends additional interest to the announcement that the Jones & Laughlin Steel Company has decided to build a new Shape mill the capacity of which will be upward of 1000 tons per day.

In the lighter lines Bars have been displaying an advancing tendency and a further rise in the price of Bands and Hoops is expected at an early date.

It is interesting to note that Russia has again begun to take American Iron and Steel. Recently some satisfactory business has been done in Wire, Tubes and Sheets.

## A Comparison of Prices.

Advances Over the Previous Month in Heavy Type,  
Declines in Italics.

At date, one week, one month and one year previous.

	Oct. 4, 1905.	Sept. 27, 1905.	Sept. 6, 1905.	Oct. 5, 1904.
<b>PIG IRON:</b>				
Foundry Pig No. 2, Standard, Philadelphia .....	\$17.00	\$16.75	\$16.25	\$14.25
Foundry Pig No. 2, Southern, Cincinnati .....	15.00	14.75	14.25	12.00
Foundry Pig No. 2, Local, Chicago .....	16.75	16.50	16.25	13.50
Bessemer Pig, Pittsburgh .....	16.35	16.35	15.60	12.85
Gray Forge, Pittsburgh .....	15.35	15.10	14.50	12.00
Lake Superior Charcoal, Chicago .....	17.50	17.00	16.50	15.25

### BILLETS, RAILS, &c.:

Steel Billets, Pittsburgh .....	25.50	25.00	25.00	19.50
Steel Forging Billets, Pittsburgh .....	29.00	29.00	29.00	....
Steel Billets, Philadelphia .....	28.00	27.00	27.00	21.50
Wire Rods, Pittsburgh .....	31.50	31.50	31.00	26.00
Steel Rails, Heavy, Eastern Mill .....	28.00	28.00	28.00	28.00

### OLD MATERIAL:

O. Steel Rails, Chicago .....	14.50	14.50	14.50	11.00
O. Steel Rails, Philadelphia .....	16.50	16.25	16.00	12.25
O. Iron Rails, Chicago .....	22.00	21.00	20.00	16.25
O. Iron Rails, Philadelphia .....	22.00	22.00	22.00	15.50
O. Car Wheels, Chicago .....	16.00	16.00	15.50	11.25
O. Car Wheels, Philadelphia .....	15.50	15.50	15.50	12.00
Heavy Steel Scrap, Pittsburgh .....	16.50	16.00	15.50	12.00
Heavy Steel Scrap, Chicago .....	14.50	14.50	14.00	10.50

### FINISHED IRON AND STEEL:

Refined Iron Bars, Philadelphia .....	1.73½	1.68½	1.63½	1.43½
Common Iron Bars, Chicago .....	1.70	1.65	1.65	1.35
Common Iron Bars, Pittsburgh .....	1.74¾	1.74¾	1.65	1.30
Steel Bars, Tidewater .....	1.64½	1.64½	1.64½	1.44½
Steel Bars, Pittsburgh .....	1.50	1.50	1.50	1.30
Tank Plates, Tidewater .....	1.74½	1.74½	1.74½	1.54½
Tank Plates, Pittsburgh .....	1.60	1.60	1.60	1.40
Beams, Tidewater .....	1.89½	1.89½	1.89½	1.54½
Beams, Pittsburgh .....	1.70	1.70	1.70	1.40
Angles, Tidewater .....	1.89½	1.89½	1.89½	1.54½
Angles, Pittsburgh .....	1.70	1.70	1.70	1.40
Skelp, Grooved Steel, Pittsburgh .....	1.50	1.50	1.50	1.30
Skelp, Sheared Steel, Pittsburgh .....	1.55	1.55	1.55	1.35
Sheets, No. 27, Pittsburgh .....	2.20	2.20	2.20	2.00
Barb Wire, f.o.b. Pittsburgh .....	2.25	2.20	2.15	2.05
Wire Nails, f.o.b. Pittsburgh .....	1.80	1.75	1.70	1.60
Cut Nails, Mill .....	1.05	1.60	1.60	1.60

### METALS:

Copper, New York .....	16.02½	16.25	16.25	12.87½
Spelter, St. Louis .....	5.85	5.86	5.65	4.95
Lead, New York .....	4.85	4.85	4.85	4.20
Lead, St. Louis .....	4.82½	4.75	4.77½	4.12½
Tin, New York .....	32.50	32.10	32.70	28.25
Antimony, Hallett, New York .....	12.50	12.75	14.00	7.00
Nickel, New York .....	40.00	40.00	40.00	40.00
Tin Plate, Domestic, Bessemer, 100 pounds, New York .....	3.74	3.74	3.74	3.40

## Chicago.

FISHER BUILDING, October 4, 1905.—(By Telegraph.)

The crest of the buying movement of Finished Iron and Steel products has been passed, requirements generally having been covered for the remainder of the year and those of the large jobbing interests through the first half of 1906. On the other hand, the activity of the Pig Iron market continues unabated, last week's sales equaling those of the previous week. As prices advance from week to week a new crop of buyers comes into the market anxious to cover wants as far into the future as sellers will permit. A shortage of Iron is feared more than higher prices, but from present indications the supply will be more than sufficient to meet the demand. While Northern furnaces are sold through the remainder of the year, a large tonnage of both Virginia and Alabama Iron is available for this period. Virginia furnaces reopened their books this week on the basis of \$14, furnace, for No. 2. Alabama interests that have refused tonnage for the past two months are now booking business on a higher basis, their prices for No. 2 ranging from \$12.50 to \$13.50, Birmingham. No business has yet been closed at the latter figure. In finished lines the tonnage has not been so heavy as during the previous week, when jobbing interests placed contracts for requirements through the first half of the year, and as large buyers have all practically covered future wants the new business will almost entirely be limited to current necessities. The Illinois Steel Company has booked 30,000 tons of Rails for Western roads for the last quarter of 1906 and an additional 6000 tons of Plates for lake boats. The tonnage of Light Rails is unusually heavy, large contracts being placed by small Western mining roads for Sections ranging from



30 to 45 lbs., which the Colorado Fuel & Iron Company is not rolling at the present time. The Republic Iron & Steel Company has rolled the entire Rail tonnage which it booked earlier in the year and is now operating its Youngstown mill on Billets, and no Rail tonnage is being taken for 1906 delivery. The total Iron tonnage booked in this market during the month of September is second only to the large bookings made during the month of February, 1902, while the total tonnage of finished products is greater than that of any previous month in the history of the trade. The advance in Wire products of \$1 a ton announced on September 28 was wholly unexpected by the trade and was doubtless the result of the heavy bookings during September, which even exceed August's total.

**Pig Iron.**—Activity continues undiminished and sales from week to week average from 50,000 to 75,000 tons, made up largely of small lots from widely diversified interests. The withdrawal of the Northern and several Southern furnaces from the market for the remainder of the year has led consumers to believe that there will a shortage of Iron during the winter months, and notwithstanding the advancing market they are as anxious to provide for their future wants as they were months ago. While very little Northern Iron is to be had for this year's delivery, the unbooked tonnage of Southern and Virginia brands is large, several of the largest producers having remained out of the market entirely during the recent period of low prices. That this unsold tonnage is more than sufficient to meet unfilled requirements is almost certain. Quotations on all grades of Iron have been advanced from 50 cents to \$1 a ton during the week. Prices on Southern grades are irregular and range from \$12.50 to \$13.50, several sales of 1000-ton lots having been made at \$13.25, Birmingham, special brands being specified. Virginia furnaces have re-entered the market, and while \$14 is the prevailing quotation for No. 2 one furnace is asking \$14.50. Southern Basic has advanced sharply and is held at \$14, Birmingham. Before this advance became effective a large Western producer purchased 4000 tons for early delivery. Lake Superior Charcoal furnaces are rapidly disposing of their large stocks, the sales during September having been larger than at any time this year and made on a basis requiring almost immediate shipment. The following quotations represent the prices quoted on current Iron, and at the maximum prices named the furnaces are taking business through the first quarter of next year:

Lake Superior Charcoal	\$17.50 to \$18.00
Northern Coke Foundry, No. 1	17.50 to 17.75
Northern Coke Foundry, No. 2	16.75 to 17.25
Northern Coke Foundry, No. 3	16.50 to 16.75
Northern Scotch, No. 1	17.75 to 18.00
Ohio Strong Softeners, No. 1	18.05 to 18.30
Ohio Strong Softeners, No. 2	17.55 to 17.80
Southern Silvery, 4 to 6 per cent. Silicon	17.65 to 18.65
Southern Coke, No. 1	16.65 to 17.15
Southern Coke, No. 2	16.15 to 16.65
Southern Coke, No. 3	15.65 to 16.15
Southern Coke, No. 4	15.40 to 15.90
Southern Coke, No. 1 Soft	16.65 to 17.15
Southern Coke, No. 2 Soft	16.15 to 16.65
Southern Gray Forge	15.15 to 15.65
Southern Mottled and White	15.15 to 15.65
Malleable Bessemer	17.00 to 17.25
Standard Bessemer	17.30 to 17.80
Jackson Co. and Ky. Silvery, 6 % Silicon	18.80
Jackson Co. and Ky. Silvery, 8 % Silicon	19.80
Jackson Co. and Ky. Silvery, 10 % Silicon	20.80
Alabama Basic	17.65

**Metals.**—The Copper market has advanced about  $\frac{1}{8}$ ¢, and notwithstanding various rumors the tendency is toward still higher prices. Tin, after a week of irregular prices, is up about  $\frac{1}{2}$ ¢. Spelter is practically unchanged. We quote: Casting Copper, 16 $\frac{1}{2}$ ¢ to 16 $\frac{3}{4}$ ¢; Lake, 16 $\frac{3}{4}$ ¢; Pig Tin, car lots, 33¢ to 33 $\frac{1}{2}$ ¢; small lots, 34¢ to 34 $\frac{1}{2}$ ¢; Spelter, prompt delivery, 6.05¢ for car lots; Lead, Desilverized, 4.80¢; Corroding, 4.90¢ for 50-ton lots; on car lots, 2 $\frac{1}{2}$ ¢ per 100 lbs. higher; Light Brass, 7 $\frac{1}{4}$ ¢. Sheet Zinc is \$7.50 list, f.o.b. Lasalle, in car lots of 600-lb. casks. On Old Metals we quote: Copper Wire, 14¢; Heavy Copper, 13 $\frac{1}{4}$ ¢; Copper Bottoms, 12 $\frac{1}{4}$ ¢; Copper Clips, 13 $\frac{1}{4}$ ¢; Red Brass, 12 $\frac{3}{4}$ ¢; Red Brass Borings, 10 $\frac{1}{4}$ ¢; Yellow Brass, Heavy, 9 $\frac{1}{4}$ ¢; Yellow Brass Borings, 7 $\frac{1}{4}$ ¢; Light Brass, 7 $\frac{1}{4}$ ¢; Lead Pipe, 4 $\frac{1}{2}$ ¢; Tea Lead, 4¢; Zinc, 4 $\frac{1}{2}$ ¢; Pewter, No. 1, 21¢; Block Tin Pipe, 27 $\frac{1}{2}$ ¢.

(By Mail.)

**Billets.**—There is practically no change in the situation on Forging Billets. The Illinois Steel Company has only a small tonnage at its disposal until the end of the year, and large lots for future delivery are quoted at \$30 for base sizes, with the usual extras, and \$32 in carload lots.

**Rails and Track Supplies.**—The Illinois Steel Company has booked an additional 30,000 tons for 1906 delivery. These Rails are for delivery during the last quarter of the year. Demand for Light Rails has improved considerably and we note one order for 1100 tons placed on the basis of \$24.50 for 45-lb. Sections. Other contracts calling for almost the same tonnage are under negotiation, Western mining and lumber interests being the largest buyers. There is no falling off in the demand for Track Supplies, railroads continuing to buy materials to accompany Rail

orders already purchased. Angle Bars accompanying Rail orders for 1906 delivery are quoted at 1.50¢; in carload lots, 1.75¢. We quote Spikes at 1.80¢ to 1.90¢, and Track Bolts are unchanged at 2.40¢ to 2.50¢, base, Square Nuts. Store prices on Track Supplies range from 15¢ to 20¢ above mill prices. The buying of Light Rails is heavy and Sections ranging from 30 to 45 lbs. are quoted at \$25; 25-lb., \$26; 20-lb., \$27; 16-lb., \$28; 12-lb., \$29; lighter Sections down to 8-lb., \$30 to \$35, f.o.b. mill. Standard Sections are quoted at \$28, f.o.b. mill, with full freight to destination.

**Structural Material.**—Shapes for three additional Lake boats have been placed, aggregating about 6000 tons, and will be rolled at Pittsburgh. Western mills have orders booked through the first quarter of next year, and deliveries on contracts placed before the recent advance can hardly be made before the second quarter. Large jobbing interests have specified on additional tonnage for delivery through the first half of the year at the advanced prices. No large building contracts are pending in the West at the present time, but railroad specifications for next year's delivery are unusually heavy, and practically all of the buying for 1906 requirements will be done this month. Jobbers' stocks continue to be drawn upon heavily for early deliveries, and the average price on this material is 2 $\frac{1}{2}$ ¢, f.o.b. Chicago, on assorted sizes. For future delivery from mill Structural Material is quoted as follows: Beams and Channels, 3 to 15 inches, inclusive, 1.86 $\frac{1}{2}$ ¢; Angles, 3 to 6 inches,  $\frac{1}{4}$ -inch and heavier, 1.86 $\frac{1}{2}$ ¢; Angles larger than 6 inches on one or both legs, 1.96 $\frac{1}{2}$ ¢; Beams, larger than 15 inches, 1.96 $\frac{1}{2}$ ¢; Zees, 3 inches and over, 1.86 $\frac{1}{2}$ ¢; Tees, 3 inches and over, 1.91 $\frac{1}{2}$ ¢, in addition to the usual extras for cutting to extra lengths, punching, coping, bending or other shop work. Store prices on Angles, Beams and Channels range from 2.50¢ to 3¢, according to quantity on hand in store or obtainable from mill.

**Plates.**—The local mill has taken on an additional 6000 tons for three Lake boats, deliveries running through the first quarter of next year. Additional boat tonnage is pending and will be placed shortly. An advance in the price of Plates is anticipated and jobbers throughout the West have covered requirements through the first half of next year. Eastern mills continue to make good deliveries and they are securing much of the prompt business. Quotations are unchanged, as follows: Tank quality,  $\frac{1}{4}$ -inch and heavier, wider than 6 $\frac{1}{2}$  inches and up to 100 inches wide, inclusive, car lots, Chicago, 1.76 $\frac{1}{2}$ ¢; 3-16 inch, 1.86 $\frac{1}{2}$ ¢; Nos. 7 and 8 gauge, 1.91 $\frac{1}{2}$ ¢; No. 9, 2.01 $\frac{1}{2}$ ¢; Flange quality in widths up to 100 inches, 1.86 $\frac{1}{2}$ ¢, base, for  $\frac{1}{4}$ -inch and heavier, with the same advances for lighter weights; Sketch Plates, Tank quality, 1.86 $\frac{1}{2}$ ¢; Flange quality, 1.96 $\frac{1}{2}$ ¢. Store prices on Plates are as follows: Tank Plate,  $\frac{1}{4}$ -inch and heavier, up to 72 inches wide, 2¢ to 2.10¢; from 72 to 96 inches wide, 2.10¢ to 2.20¢; 3-16 inch up to 60 inches wide, 2.10¢ to 2.20¢; 72 inches wide, 2.35¢ to 2.45¢; No. 8 up to 60 inches wide, 2.10¢ to 2.15¢; Flange quality, 25 cents extra.

**Sheets.**—The Sheet market continues to improve, not only on Black but on Galvanized Sheets as well, and while a few of the independent mills are still willing to make 2.20¢, Pittsburgh, for 28-Gauge Black Sheets, accompanied by immediate specifications, on contracts for future delivery better than 2.25¢ cannot be done and a few mills are quoting 2.30¢. Demand for Electrical Sheets is heavy and large contracts for future delivery have been placed by Western electrical manufacturers during the week. Practically all the large contracts for delivery the remainder of the year have been placed considerably lower than 2.20¢. A big improvement is noted in the demand from store and we revise discounts as follows: Blue Annealed, Nos. 9 and 10, 1.81 $\frac{1}{2}$ ¢ to 1.86 $\frac{1}{2}$ ¢; Box Annealed, Nos. 18 and 20, 2.16 $\frac{1}{2}$ ¢ to 2.21 $\frac{1}{2}$ ¢; No. 27, 2.31 $\frac{1}{2}$ ¢ to 2.36 $\frac{1}{2}$ ¢; No. 28, 2.41 $\frac{1}{2}$ ¢ to 2.46 $\frac{1}{2}$ ¢, with the customary differentials between gauges. Store prices are 2¢ to 2.10¢ for No. 10 Blue, 2.05¢ to 2.15¢ for No. 12 Box, 2.10¢ to 2.20¢ for No. 14, 2.20¢ to 2.30¢ for No. 16, 2.40¢ to 2.50¢ for Nos. 18 and 20, 2.50¢ for Nos. 22 and 24, 2.55¢ to 2.65¢ for No. 26, 2.60¢ to 2.70¢ for No. 27, 2.70¢ to 2.80¢ for No. 28, 2.95¢ to 3.05¢ for No. 30. Galvanized Sheets are quoted in car lots from mill at the following prices: No. 10, 2.36 $\frac{1}{2}$ ¢ to 2.41 $\frac{1}{2}$ ¢; Nos. 17 to 21, 2.71 $\frac{1}{2}$ ¢ to 2.76 $\frac{1}{2}$ ¢; No. 27, 3.26 $\frac{1}{2}$ ¢ to 3.31 $\frac{1}{2}$ ¢; No. 28, 3.46 $\frac{1}{2}$ ¢ to 3.51 $\frac{1}{2}$ ¢. Store prices on Galvanized Sheets are firmer than for some time and high prices are being demanded for sizes difficult to obtain. Prices are as follows: Nos. 10, 12 and 14, 3.10¢ to 3.20¢; Nos. 16 to 20, 2.90¢ to 3¢; Nos. 22 to 24, 3¢ to 3.15¢; No. 26, 3.20¢ to 3.35¢; No. 27, 3.40¢ to 3.55¢; No. 28, 3.60¢ to 3.75¢; No. 30, 4.85¢ to 4.95¢.

**Bars.**—An advance on Steel Bars, Bands and Hoops of \$2 a ton is expected shortly. The advance on Hoops is to be made in spite of the recent advance in order to preserve the proper spread. Practically all the large buyers of Bars have covered their needs until July next year, and the advance will only affect the few small concerns that are still uncovered. Iron Bars are firm at 1.70¢ to 1.75¢, and as high as 1.80¢ is asked by the largest producer on certain sizes. We quote: Iron Bars, 1.70¢ to 1.75¢; Steel Bars,



1.66 $\frac{1}{2}$ ¢, both half extras; Hoops, 1.91 $\frac{1}{2}$ ¢, extras as per Hoop card; Bands, 1.66 $\frac{1}{2}$ ¢, as per Steel card; Soft Steel Angles and Shapes, 1.76 $\frac{1}{2}$ ¢, half extras, and Hard Steel Angles and Bars at about 10c. below the price of Soft Steel. In store prices Steel Bars and Bands are being held at a minimum of 1.85¢, base, half extras; Steel Angles and Shapes, 1.95¢, half extras, and Soft Steel Hoops, 2.20¢, full extras, with 5c. to 10c. higher than the minimum prices named for small quantities from store.

**Merchant Steel.**—Effective September 26, a change in the extras on Steel Tires was made. Planished or Smooth Finished is unchanged at 1.70¢, base, Pittsburgh, and Iron finish up to 1 $\frac{1}{2}$  x  $\frac{1}{2}$  inch is 1.65¢, base, Pittsburgh; Iron finish, 1 $\frac{1}{2}$  x  $\frac{1}{2}$  inch and larger, 1.50¢, base, Pittsburgh, and Channels for solid rubber tire are quoted as follows:  $\frac{3}{4}$ ,  $\frac{1}{2}$  and 1 inch, 2c., Pittsburgh, and 1 $\frac{1}{2}$ -inch and larger, 1.90¢, Pittsburgh. Other quotations remain unchanged, as follows: Smooth Finished Machinery Steel, 1.91 $\frac{1}{2}$ ¢; Smooth Finished Tire, 1.86 $\frac{1}{2}$ ¢; Flat Sleigh Shoe, 1.71 $\frac{1}{2}$ ¢; Concave and Convex Sleigh Shoe, 1.86 $\frac{1}{2}$ ¢; Cutter Shoe, 2.40¢; Toe Calk Steel, 2.21 $\frac{1}{2}$ ¢; Railway Spring, 1.86 $\frac{1}{2}$ ¢; Crucible Tool Steel, 6 $\frac{1}{2}$ ¢ to 8c.; special grades of Tool Steel, 13c. and up; Shafting, 50 per cent. discount in car lots and 45 per cent. in less than car lots, in base territory.

**Merchant Pipe.**—Several independent producers have withdrawn from the market temporarily, being unable to compete on the low basis now prevailing. The volume of new business continues heavy, but prices remain low where the tonnage is large. While the bulk of the business is placed at 80 off, as low as 80 and 5 continues to be done, and there appears to be no immediate prospect of these low prices being withdrawn. Large jobbing interests throughout the West are buying heavily to cover future requirements and the movement of Pipe from store has improved materially during the past few weeks. Current discounts to consumers from mill on Black Steel Pipe are unchanged at 77.35 to 77.85 per cent. on the base sizes,  $\frac{3}{4}$  to 6 inches, and Galvanized is quoted at 10 per cent. less. Iron Pipe is held at from 1 $\frac{1}{2}$  to 2 points higher. From store in small lots, Chicago, jobbers are quoting 76 $\frac{1}{2}$  to 77 per cent.

**Boiler Tubes.**—Boiler Tube manufacturers generally are not in position to make prompt deliveries and the volume of business that is being placed continues larger than shipments from most of the large mills. No difficulty is experienced in maintaining discounts, which have been unchanged for several months. Official discounts, f.o.b. Chicago, in car lots, are as follows: Steel Tubes, 62.35; Iron, 51.35; Seamless, 50.35. Store prices are unchanged as follows:

	Steel.	Iron.	Seamless.
1 to 1 $\frac{1}{4}$ inches.....	40	35	42 $\frac{1}{2}$
1 $\frac{1}{4}$ to 2 $\frac{1}{4}$ inches.....	50	35	35
2 $\frac{1}{4}$ inches.....	52 $\frac{1}{2}$	35	30
2 $\frac{1}{2}$ to 5 inches.....	60	47 $\frac{1}{2}$	42 $\frac{1}{2}$
6 inches and larger.....	50	35	..

**Cast Iron Pipe.**—Last week the contract for 700 tons for the city of Chicago was awarded the United States Cast Iron Pipe & Foundry Company. This included 16 and 30 inch sizes. Newark, Ohio, will award a contract for 4500 tons of Pipe this week, while the contract for the city of New York is still pending. An advance of 50c. a ton on practically all sizes has been made, due almost entirely to the advancing Iron market. Prices on current orders are as follows, f.o.b. Chicago, per net ton: Water Pipe, 4-inch, \$30; 6, 8, 10 and 12 inch, \$29; over 12-inch, \$28, with \$1 extra for Gas Pipe. Very large municipal contracts are placed on a somewhat lower basis.

**Coke.**—Foundries throughout the West continue to place contracts for their Coke requirements through the remainder of the year. Specifications are also heavy, foundries generally being anxious to lay in heavy stocks before the car shortage materializes. Occasional car lots on contract, Chicago, are offered at prices considerably lower than those ruling on current business. We quote: Strictly Connells-ville Foundry Coke, \$2.60 to \$2.75, at the ovens, which is equivalent to \$5.25 to \$5.40, Chicago. Furnaces generally are covered through the remainder of the year, and buying for requirements for the first six months of 1906 has not yet set in. Furnace Coke for Western delivery is quoted at \$2.35 to \$2.50, at the ovens. The freight rate on Furnace Coke for delivery to blast furnaces is \$2.35 from the Connells-ville field.

**Old Materials.**—While consumers are buying freely to meet early requirements, large tonnages have not yet been contracted for, notwithstanding the general upward movement of the past two months. They realize that dealers' stocks are unusually heavy and that railroad offerings are coming forward freely, while the Illinois Central Railroad is credited with carrying a stock of close to 50,000 tons in anticipation of a still higher market. Cast and Wrought Scrap are higher, and Iron Rails have also moved up about 50c. Lists have been issued this week by the Baltimore & Ohio, Northwestern and Chicago Junction railroads. The Baltimore & Ohio list closes October 9 and the other two this week. The offerings generally are small. The range of prices paid

by large consumers to producers and dealers in car lots, f.o.b. Chicago, is as follows:

Old Iron Rails.....	\$22.00 to \$22.50
Old Steel Rails, 4 feet and over.....	15.50 to 16.00
Old Steel Rails, less than 4 feet.....	14.50 to 15.00
Heavy Relaying Rails, subject to inspection.....	26.50 to 27.00
Old Car Wheels.....	16.00 to 16.50
Heavy Melting Steel Scrap.....	14.50 to 15.00
Frogs, Switches and Guards.....	14.50 to 15.00
Mixed Steel.....	11.50 to 12.00

The following quotations are per net ton:

Iron Fish Plates.....	\$18.50 to \$19.00
Iron Car Axles.....	23.50 to 24.00
Steel Car Axles.....	17.50 to 18.00
No. 1 Railroad Wrought.....	17.00 to 17.50
No. 2 Railroad Wrought.....	16.00 to 16.50
Locomotive Tires, smooth.....	14.25 to 14.50
Railway Springs.....	14.00 to 14.50
No. 1 Dealers' Forge.....	14.00 to 14.50
Wrought Pipes and Flues.....	12.00 to 12.50
No. 1 Cut Busheling.....	12.00 to 12.50
Iron Axle Turnings.....	11.50 to 11.75
Soft Steel Axle Turnings.....	11.00 to 11.50
Machine Shop Turnings.....	11.00 to 11.50
Cast Borings.....	9.00 to 9.25
Mixed Borings, &c.....	9.00 to 9.25
No. 1 Mill.....	10.00 to 10.50
Country Sheet.....	8.50 to 9.00
No. 1 Boilers, cut to Sheets and Rings.....	11.75 to 12.25
No. 1 Cast Scrap.....	14.00 to 14.50
Stove Plate and Light Cast Scrap.....	11.50 to 12.00
Railroad Malleable.....	14.25 to 14.50
Agricultural Malleable.....	13.25 to 13.75

## Philadelphia.

REAL ESTATE TRUST BUILDING, October 3, 1905.

The situation in the Iron and Steel markets is difficult to define with much exactness. It is, however, perfectly safe to say that the outlook for business is magnificent. Many of those who have had the greatest experience say there has been nothing in the past to equal it. The only difficulty to be feared is that prices may be forced higher than is necessary. The capacity for production is believed to be enough to meet all legitimate requirements; the great danger will be in overtrading. This feature has been alluded to several times during the past two or three months, but as it still retains its prominence it requires to be watched accordingly. Prices are not high, considering the prevailing conditions, and they are liable to an advance at any time, but the mischief is that buyers get more excited every time an advance is made, which usually brings on another advance, and another one on top of that, until finally, when every buyer has all the material he needs and prices stop advancing, trouble begins, the demand falls off and price recessions begin also. Consumers may possibly have to pay a dollar or two more than to-day's prices for Pig Iron, but to run it up to \$4, \$5 or \$6 per ton more will be purely and simply because they are speculating on futures. There seems to be little doubt that prices are going to be higher, and if consumers insist upon speculating in futures they may go a good deal higher. It is a well-known axiom that prices are regulated by demand, but if the demand is in a measure speculative it is not legitimate in the strict sense of the word, and is therefore liable to become a boomerang sooner or later. Strictly speaking, it is consumption that determines values, so that buying done within 30 to 60 days for six or nine months' consumption is in some degree speculative, and should not be regarded as a safe basis to work on after such advances as have already been made. As already stated, some advance on to-day's prices appears to be fully warranted, but the best interests of the trade will be served by moderation on all sides. There is no reason to fear any great scarcity of pig iron or in the finished products, particularly if prices are advanced so as to stimulate production. The output of Pig Iron from this time forward is expected to be at the rate of 24,000,000 tons per annum, and as this will come near to meeting all probable requirements of consumers, there is no apparent reason why it should reach extremely high figures. High prices are pleasant enough so long as they last, but the aftermath that follows is invariably an unpleasant experience. What the leaders in the trade are trying to establish is duly remunerative prices, something that can be realized as long as the prosperity lasts, without any of the unpleasant features which are usually met with when the reaction begins, as it certainly will sooner or later.

**Pig Iron.**—The market is very strong and prices are again dearer. Makers of Pig Iron are disposed to keep buyers at arm's length on next year's deliveries, although they have all sold more or less of their tonnage for delivery during the first and second quarters of 1906. The outlook as regards costs is so menacing, however, that makers are unwilling to enter orders at present prices, or even at higher prices, as they are completely in the dark as to the conditions which may prevail six or eight months hence. Their opinion seems to be that they had better take their chances on what the conditions may be later on than to sell to their full capacity at to-day's prices, especially as they have already sold very liberally for forward delivery. If

prices are higher they will need all the market will afford to average up on what is already on their books. Of course if buyers insist on having quotations sellers will make them high enough to cover whatever contingencies may be developed in the interim. In some cases such inquiries have resulted in quotations much beyond to-day's prices, but the parties making them say that although they would rather not have the business it would be no surprise to see them taken up. Prices to-day average a little more than 25c. higher than those of last week, but there is no certainty that they will remain at that level for any definite period; but, as we have already intimated, all depends on what buyers may do, although it is certain that no large amount of business can be placed without causing further advances. No. 2 X Foundry Irons at the present moment can be had at \$17 to \$17.25, Gray Forge at \$15.50 to \$15.75, Basic at \$16.75 to \$17 and Low Phosphorus at \$22 to \$22.50. Southern No. 2 X Foundry can be had at \$16.50, rail delivery, although some furnaces have withdrawn quotations entirely; but under present conditions changes are liable to occur at almost any moment. Meanwhile a fair average of the market for Philadelphia and nearby deliveries is about as follows:

No. 1 X Foundry.....	\$17.50 to \$18.00
No. 2 X Foundry.....	17.00 to 17.25
No. 2 Plain.....	16.50 to 16.75
Southern No. 2 X.....	16.50 to 16.75
Standard Gray Forge.....	15.50 to 15.75
Basic.....	16.75 to 17.00
Low Phosphorus.....	21.50 to 22.50

**Spiegeleisen.**—There is no Spiegel available for this year's delivery, and it is said that about \$29 would be required for 20 per cent., 1906 delivery.

**Ferromanganese.**—The scarcity of this article is as great as ever, and fully \$55 would be required for 1906 deliveries.

**Steel.**—Large sales have been made during the past week, and deliveries on large lots would be hard to secure during 1905. Prices are about \$28 for ordinary Steel, and from that to \$35 for the high carbons.

**Muck Bars.**—Sales have been made at \$28, delivered, but there is no inquiry at the moment, as the mills seem to be pretty well filled up for the present.

**Plates.**—The demand for Plates is steadily expanding, and mills are now working very close to their full capacity. Consumers in the South and West are placing large orders with Eastern mills, and it is quite clear that they will have the heaviest business on record during the remainder of this year and quite likely well into 1906. Prices unchanged, as follows:

	Carload.	Part carload.
	Cents.	Cents.
Tank, Bridge and Boat Steel.....	1.73½	1.78½
Flange or Boiler Steel.....	1.83½	1.88½
Marine, A. B. M. A. and Commercial		
Fire Box Steel.....	1.93½	1.98½
Still Bottom Steel.....	2.03½	2.08½
Locomotive Fire Box Steel.....	2.23½	2.28½
The above are base prices for ¼-inch and heavier. The following extras apply:		
3-16-inch thick.....	\$0.10	pounds extra.
Nos. 7 and 8. B. W. G.....	.15	"
No. 9. B. W. G.....	.25	"
Plates over 100 to 110 inches.....	.05	"
Plates over 110 to 115 inches.....	.10	"
Plates over 115 to 120 inches.....	.15	"
Plates over 120 to 125 inches.....	.25	"
Plates over 125 to 130 inches.....	.50	"
Plates over 130 inches.....	1.00	"

**Structural Material.**—There is nothing to be said except that buyers are chasing around everywhere in the hope of finding some mill that can help them out. As a matter of form we quote prices which are supposed to be in force, but as new orders cannot be placed quotations under such circumstances have little or no value. Beams and Channels up to 15 inches are nominally quoted at 1.83½c. to 2c., and a tenth more for large sizes, and about the same schedule for Angles.

**Bars.**—The market is not particularly active locally, although the mills are taking on a great deal of business from points at a distance. Some business is being done on the basis of 1.73½c. for best Refined Iron, but prompt specifications are a part of the contract, otherwise the business is not wanted. Some mills quote 1.83½c., but the usual price is 1.73½c. Steel Bars are about on the same basis as Refined Iron, but less than carload lots are in most cases quoted at a differential of \$5 per ton.

**Sheets.**—Business is very active and while prices are unchanged they show increased firmness, but for the present are quoted as follows: 18 to 20 gauge, 2.30c.; 22 to 24 gauge, 2.40c.; 25 and 26 gauge, 2.50c.; 27 gauge, 2.60c., and 28 gauge, 2.70c.

**Old Material.**—There is a better demand and as a rule prices are stronger, and in some specialties they are distinctly dearer. Dealers in many cases are paying as much as or more than consumers are willing to pay, but business has been done at about the following prices, delivered in buyers' yards:

Scrap Steel Rails.....	\$16.50 to \$16.75
No. 1 Steel Scrap.....	16.00 to 16.50
Low Phosphorus Scrap.....	21.00 to 22.00
Old Steel Axles.....	21.00 to 21.50
Old Iron Axles.....	25.00 to 25.50
Old Iron Rails.....	22.00 to 23.00
Old Car Wheels.....	15.50 to 16.00
Choice Scrap, R. R. No. 1 Wrought.....	21.00 to 22.00
No. 1 Yard Scrap.....	18.50 to 19.00
Long and Short.....	17.50 to 18.00
Machinery Scrap.....	15.50 to 16.00
Wrought Iron Pipe.....	16.00 to 16.25
No. 1 Forge Fire Scrap.....	15.00 to 15.50
No. 2 Light Ordinary.....	12.00 to 12.50
Wrought Turnings.....	14.00 to 14.50
Axle Turnings, Choice Heavy.....	14.75 to 15.00
Cast Borings.....	9.75 to 10.00
Stove Plates.....	12.50 to 13.00
Grate Bars.....	12.00 to 12.75

## Pittsburgh.

PARK BUILDING, October 4, 1905.—(By Telegraph.)

A very heavy tonnage of Bessemer and Basic Pig Iron has been sold in the past week, most of it for delivery in first quarter and first half of next year, at prices ranging from \$15.25 up to \$15.50, Valley furnace. During last week most of the Bessemer and Basic Iron sold was on the basis of \$15, Valley furnace, but on Friday and Saturday and during the first three days of this week from 50,000 to 75,000 tons have been sold at prices above stated, and the market is squarely \$15.50, at furnace, to-day. It is claimed that at \$15 Bessemer and Basic Iron was too low, based on the high prices asked for Coke next year, which range from \$2.50 up to \$2.75 a ton, at oven. Of the United States Steel Corporation's purchases in September 25,000 to 30,000 tons have not yet been shipped, and the corporation is expected to buy at least 40,000 tons more for October delivery. For this latter Iron it will likely have to pay \$15.50, at Valley furnace, as none of the large sellers seem disposed to sell any considerable tonnage of Iron at less than this price. The Westinghouse Electric & Mfg. Company has bought a considerable tonnage of Foundry and Bessemer Iron, and another leading consumer is in the market for upward of 4000 tons for first quarter delivery, which will likely be closed this week. We quote Northern No. 2 Foundry Iron at \$15 to \$15.25, Valley furnace, but note that most of the large tonnage sold recently has been at \$15, at furnace, or slightly less. Northern Forge Iron is fairly strong at \$14.50, Valley furnace, but some sellers are holding their Forge Iron at \$15, at furnace.

**Steel.**—The scarcity in the supply of Billets and Bars is becoming more acute, all the Steel plants having a heavy tonnage on their books and being unable to make prompt deliveries. There is a heavy inquiry and prices are very strong. Bessemer Billets for reasonably prompt delivery would readily bring \$25.50, while Open Hearth Billets would bring \$26 to \$27, maker's mill. Sheet and Tin Bars are very hard to get for prompt delivery. We quote Sheet and Tin Bars for prompt delivery at \$26 to \$27, maker's mill, for random lengths. Forging Billets are held at \$28 and higher, depending on specifications and carbons.

(By Mail.)

The greatest activity prevails in the Iron trade and it is going to require the strongest efforts that can be made by the leading interests to hold the market in check and keep prices from advancing to the danger point. Past experience shows very conclusively that very high prices on Pig Iron, Steel or Finished lines are usually followed by a sharp reaction, and it will be the aim to avoid this by holding the market about where it is and not run the risk of curtailing consumption by having relatively high prices. In spite of the opinion of leading producers and consumers of Pig Iron that \$15, Valley furnace, for Bessemer and Basic was amply high enough, the market has gone beyond this price and is now squarely \$15.50, at Valley furnace, although comparatively little tonnage has been sold at this price. On the other hand, it is a fact that last week and early this week sales of Bessemer and Basic Iron for delivery through balance of this year and through the first six months of next year were made at prices ranging from \$15.25 to \$15.40, Valley furnace, but it is now very doubtful whether any tonnage of either Bessemer or Basic could be had at less than \$15.50, Valley furnace. The total purchases of the United States Steel Corporation in September were 80,000 tons, and there is every reason to believe it will need 40,000 to 50,000 tons additional Iron for October delivery. It now looks as though it will have to pay \$15.50, Valley furnace, for the next Iron it buys, as the two leading sellers, the Bessemer Pig Iron Association and the Shenango Furnace Company, are holding their Iron for this price. Two Steel companies that are large producers of Pig Iron are running their Steel plants to such a capacity that they see a shortage of Iron ahead of them and are quietly figuring on the purchase of large blocks of Bessemer Iron for first half of the year delivery. Prices on Foundry Iron are very strong and a heavy tonnage has been sold in the past two weeks. Southern producers are now holding No. 2 Foundry at \$12.50, Birming-



ham, which is equal to \$16.85, Pittsburgh, while Northern furnaces are quoting \$15.25 to \$15.50, Valley furnace, for No. 2, and the market is very firm at these prices. Forge Iron is more active, some Northern brands being held at \$15, Valley, or \$15.85, Pittsburgh. We note a continued scarcity of Bessemer and Open Hearth Billets, particularly of the latter, and it is really no longer a question of price, but where to get the Steel. Open Hearth Billets would readily bring \$26, and for prompt shipment \$27 or higher has been quoted. The market on all kinds of Finished Iron and Steel is very active with the exception of Sheets and Tin Plate, but tonnage on the former is picking up. Pipe is also more active, and the leading interest issued a new list of discounts on October 2, putting Merchant sizes at 80 per cent. off, which has been the actual price for the past two or three months.

**Ferromanganese.**—As noted in this report last week, Ferromanganese for prompt shipment is exceedingly scarce and for October and November delivery is held at \$55, delivered. For deliveries commencing December and running into next year \$51 to \$52, Pittsburgh, is being quoted. It is believed that prior to January 1 the supply will be larger and for this reason dealers in foreign Ferro are quoting \$3 to \$4 a ton lower for extended delivery than for prompt shipment.

**Steel Rails.**—In the past week a number of large contracts for Rails have been placed for 1906 delivery, the mills being so well sold up that they are absolutely refusing to take on business for this year, so that Rails for early delivery command a premium in prices. With tonnage already booked and in sight the Rail mills are practically filled to June of next year, and the Illinois Steel Company for a longer period. We note a fairly active demand for Light Rails, prices being very firm, as follows: 8-lb., \$36 to \$37; 10-lb., \$32 to \$33; 12-lb., \$29 to \$30; 16-lb., \$27 to \$28; 25-lb to 45-lb., \$26 to \$26.50, all f.o.b. cars maker's mill. A large tonnage in Light Rails has been placed recently.

**Rods.**—Several good sized inquiries for Rods are in the market, one for 3500 to 4000 tons, but the two leading interests are said to be out of the market as sellers of Rods, needing their entire output for their Wire products. Bessemer and Open Hearth Rods are held at \$31.50 to \$32 and are exceedingly scarce at these prices. Open Hearth Chain Rods are held at \$35, maker's mill.

**Muck Bar.**—The quotation of \$26, Pittsburgh, on Muck Bar in this report last week was a typographical error and should have read \$28, Pittsburgh. The higher prices of Forge Iron have firmed up the market on Muck Bar considerably and we now quote best grades of Muck Bar, made from all Pig Iron, at \$27.75 to \$28, Pittsburgh.

**Skelp.**—Mills rolling Skelp are filled up with tonnage, making prompt deliveries hard to obtain. Prices are very firm and will likely be higher. For ordinary widths we quote: Grooved Steel Skelp, 1.50c. to 1.55c.; Open Hearth, 1.55c. to 1.60c.; Sheared, \$1 advance; Grooved Iron Skelp, 1.55c. to 1.60c.; Sheared, 1.65c. to 1.70c., maker's mill.

**Plates.**—The differential of 10c. per 100 lbs. in favor of narrow plates, 6¼ to 14 inches wide, has been eliminated by the mills, all Plates now being on the basis of 1.60c. The Plate mills are very full of work, running mostly on orders from the Steel car interests; in fact, it is said that 75 per cent. of the present heavy tonnage in Plates is going into Steel cars. The usual quarterly meeting of the Plate Association will be held during this month and it would not be surprising if an advance in prices is made. The market is very firm and we quote: Tank Plates ¼ inch thick, 6¼ up to 100 inches in width, 1.60c., base, at mills, Pittsburgh. Extras over the above prices are as follows:

	Extra per 100 pounds.
Gauges lighter than ¼-inch to and including 3-16-inch Plates on thin edges.....	\$0.10
Gauges No. 7 and No. 8.....	.15
Gauge No. 9.....	.25
Plates over 100 to 110 inches.....	.05
Plates over 110 to 115 inches.....	.10
Plates over 115 to 120 inches.....	.15
Plates over 120 to 125 inches.....	.25
Plates over 125 to 130 inches.....	.50
Plates over 130 inches.....	1.00
All sketches (excepting straight taper Plates varying not more than 4 inches in width at ends, narrowest end being not less than 30 inches)...	.10
Complete Circles.....	.20
Boiler and Flange Steel Plates.....	.10
Marine, "A. B. M. A.," and ordinary Fire Box Steel Plates.....	.20
Still Bottom Steel.....	.30
Locomotive Fire Box Steel.....	.50
Shell Grade of Steel is abandoned.	

**TERMS.**—Net cash 30 days. For anticipated payments a maximum discount may be allowed at the rate of 6 per cent. per annum and for a longer time than 30 days interest shall be charged at the same rate per annum. Invoices paid within ten days from date thereof, discount of ¼ of 1 per cent. is allowable. Pacific Coast base, 1.40c. f.o.b. Pittsburgh, with all rail tariff rate of freight to destination added, no reduction for rectangular shapes 14 inches wide down to 6 inches of Tank, Ship or Bridge quality.

**Structural Material.**—The announcement that the Jones & Laughlin Steel Company has decided to build a new

Structural mill on the South Side to roll the intermediate sizes of Beams, Channels and other Shapes, and to have a capacity of upward of 1000 tons a day, is of interest. There has been a great scarcity for some time of the medium sizes of Structural Steel, but the new mill being built by the Carnegie Steel Company at Clairton and the one to be built by the Jones & Laughlin Steel Company will help out a good deal. The Clairton mill is to be ready in November, but it will be April or May before the Jones & Laughlin mill is finished. No very large contracts have been taken in this district lately, but a good deal of work is in sight. The McClintic-Marshall Construction Company has taken a Steel building for the Pressed Steel Car Company at Butler which will require about 500 tons. In fact, the leading interests are not hunting large work, being filled up for months ahead, and are more independent in their ideas as to prices. The whole market is very strong and we quote: Beams and Channels, up to 15-inch, 1.70c.; over 15-inch, 1.80c.; Angles, 3 x 2 x ¼ inch thick up to 6 x 6 inches, 1.70c.; Angles, 8 x 8 and 7 x 3½ inches, 1.80c.; Zees, 3-inch and larger, 1.70c.; Tees, 3-inch and larger, 1.75c. Under the Steel Bar card Angles, Channels and Tees under 3-inch are 1.60c., base, for Bessemer and Open Hearth, subject to half extras on the Standard Steel Bar card.

**Sheets.**—Some improvement in demand for Sheets is noted, and it is believed the tonnage will increase steadily from this time forward. The leading interest is operating 85 per cent. of its Sheet capacity and the outside mills are also fairly busy. Prices are only fairly strong and our quotations are sometimes slightly shaded on very desirable tonnage. We quote: Black Sheets, box annealed, one pass through cold rolls, No. 24 gauge, 2.05c. to 2.10c.; No. 26, 2.15c. to 2.20c.; No. 27, 2.20c. to 2.25c.; No. 28, 2.25c. to 2.30c. Galvanized Sheets are quite firm and we quote: Nos. 22 and 24, 2.75c. to 2.80c.; Nos. 25 and 26, 2.95c. to 3c.; No. 27, 3.10c. to 3.15c.; No. 28, 3.30c. to 3.35c. We quote No. 28 Gauge Painted Roofing Sheets at \$1.65 to \$1.75 per square, and Galvanized Roofing Sheets, No. 28 gauge, at \$2.85 to \$2.95 for 2½-inch corrugation. Jobbers charge the usual advances over above prices for small lots from store.

**Iron and Steel Bars.**—Tonnage in both Iron and Steel Bars continues heavy and all the leading mills have work ahead for several months. Reports are current almost every day that Steel Bars have been advanced \$2 a ton, and while this action is expected at almost any time there has as yet been no advance. Leading mills rolling Steel Bars will not promise deliveries inside of 90 days, and on Iron Bars the situation is about the same. Refined Iron Bars are 1.70c., Youngstown, or 1.74¼c., Pittsburgh. We quote Steel Bars at 1.50c., base, half extras, for carloads and larger lots.

**Hoops and Bands.**—A moderate amount of new tonnage is being placed in Hoops and Bands, but leading consumers contracted heavily before the recent advance in prices and are now specifying quite liberally on these contracts. We quote Steel Hoops at 1.75c. and Bands to be used for coopeage purposes at 1.75c., the latter carrying full Hoop and Band extras. Bands for other than coopeage purposes are 1.50c., base, half extras, as per Standard Steel card. Above prices are for carload lots, f.o.b. Pittsburgh, plus full tariff Rail rate to point of delivery.

**Tin Plate.**—Some little betterment in the demand for Tin Plate is reported, the leading interest operating about 55 per cent. of its capacity, while, as a rule, the independent mills are operating to about half capacity. We quote Tin Plate at \$3.50 to \$3.55, base, terms 30 days, less 2 per cent. off for cash in 10 days. These prices, however, do not represent minimum of the market, but are being shaded from 15c. to 25c. a box, depending on specifications and deliveries wanted.

**Merchant Steel.**—Some additional season contracts for delivery up to July of next year are being placed and consumers are specifying very freely. Deliveries by the mills are rather unsatisfactory, some concerns being two to three months behind on orders. For current tonnage we quote: Flat Sleigh Shoe, 1.50c. to 1.55c.; Toe Calk Steel, 2c. to 2.05c.; Smooth Finished Tire, 1.65c. to 1.70c.; Cutter Shoes, 2.15c. to 2.20c.; Railway Spring Steel, 1.65c. to 1.70c.; Crucible Tool Steel, 5½c. to 8c. for ordinary grades; special grades, 12c. and upward. Shafting is in fair demand, discounts being 50 per cent. off in carloads and 45 per cent. in less than carloads.

**Railroad Spikes.**—The demand is quite active and the recent advance of 10c. per 100 lbs. is being rigidly held. We quote Railroad Spikes at \$1.75 per 100 lbs. per maker's mill.

**Spelter.**—The market has again shown a sharp advance and is very firm. We quote best grades of Western Spelter at 5.75c. to 5.80c., St. Louis, equal to 5.87¼c. and 5.92½c., Pittsburgh, the freight from St. Louis to Pittsburgh being 12½c. per 100 lbs.

**Merchant Pipe.**—Under date of October 2 the National Tube Company issued a new discount, quoting Merchant sizes of Pipe at 79 off to consumers and 80 per cent. off to jobbers, these being the discounts quoted in these reports for



some weeks past. The tonnage in Pipe has materially increased lately, the betterment in demand being general from all parts of the country. Two or three large oil and gas lines are on the tapis and are expected to be placed within a short time. Prices on Merchant Pipe, effective from October 2, are as follows:

Merchant Pipe.							
Jobbers, carloads.				Consumers, carloads.			
Steel.		Iron.		Steel.		Iron.	
Blk.	Galv.	Blk.	Galv.	Blk.	Galv.	Blk.	Galv.
1/4 and 3/4 inch.....	72	56	69 1/2	53 1/2	71	55	68 1/2
3/4 and 1 inch.....	72	64	73 1/2	61 1/2	75	63	72 1/2
1 to 6 inches.....	80	70	78	68	79	69	77
7 to 12 inches.....	75	60	73	57 1/2	74	59	72
Extra strong, plain ends:							
1/4 to 3/4 inch.....	65	53	62 1/2	50 1/2	64	52	61 1/2
3/4 and 1 inch.....	72	60	69 1/2	57 1/2	71	59	68 1/2
1 to 8 inches.....	68	56	65 1/2	53 1/2	67	55	64 1/2
Double extra strong, plain ends:							
1/2 to 8 inches.....	61	50	58 1/2	47 1/2	60	49	57 1/2

**Boiler Tubes.**—We note a continued active demand, the mills being from two to three months behind on deliveries. Discounts in carload lots are as follows:

Boiler Tubes.		Iron.	Steel.
1 to 1 1/4 inches.....		41	44
1 1/4 to 2 1/4 inches.....		41	56
2 1/4 inches.....		46	58
2 1/4 to 5 inches.....		53	64
6 to 13 inches.....		41	56

**Coke.**—There is more or less excitement in the Coke trade and prices are steadily going higher. Contracts for strictly Connellsville Furnace Coke for delivery over first half of next year have been made on the basis of \$2.35 to \$2.60 a ton at oven, and it is stated that as high as \$2.70 has been offered on straight contracts for the best grades of Connellsville Furnace Coke for delivery in first six months of next year. It is predicted the price will be \$3 a ton before long and there seems to be an absolute scarcity of Coke. Prices of Foundry Coke are also higher and best grades of 72-hour Foundry are held at \$2.75 to \$3 a ton at oven. The output continues heavy and last week the Upper and Lower Connellsville regions made about 355,000 tons of Coke. We note that Furnace and Foundry Cokes made outside the Connellsville region and in West Virginia are selling at 25c. to 50c. a ton lower than above prices.

**Iron and Steel Scrap.**—We note a very active demand for practically all kinds of Scrap and the market is very firm, with some dealers quoting higher prices. Heavy Melting Scrap is now held at \$16.50 in gross tons and the supply at this price is limited, as some dealers are holding what they have for a still higher figure. No. 1 Wrought Scrap is \$16.50; Cast Iron Borings, \$9 to \$9.50; Bundled Sheet Scrap, \$14.25 to \$14.50; Old Steel Rails, short pieces, \$16; long pieces, \$16.50; Machinery Cast Scrap, \$15, and Cast Steel Scrap, \$15.50, all in gross tons, f.o.b. Pittsburgh.

## Cleveland.

CLEVELAND, OHIO, October 3, 1905.

**Iron Ore.**—Estimates are that the movement of Iron Ore down the lakes during the month of September approximated 4,250,000 tons. This exceeds the estimates made for the month and demonstrates that with comparative ease the shippers would be able to move this year if they desired approximately 32,000,000 tons by water in addition to the amount handled by all rail. Freight rates remain at 75c. from the head of the lakes, 70c. from Marquette and 60c. from Escanaba.

**Pig Iron.**—A tendency to speculate has developed among consumers in this territory. The broker who speculates was eliminated as a factor some time back, but buying by consumers who intend to store the Iron against future needs is not so easily governed. The expectation that prices will work higher has increased the speculative element. Buying has been given a considerable impetus in this territory during the past two weeks, and especially during the past week. The number of furnaces announcing that they are sold up for the remainder of the year is increasing. The strongest situation has been in Steel making Irons. Some Basic has been sold at \$15.25, in the Valleys, for delivery through the remainder of this year. A much larger tonnage has been sold for delivery through the first half of next year at \$15.50, in the Valleys. It is understood that there is inquiry for a large tonnage of Basic, which cannot be supplied at the present time. One estimate of the amount is 40,000 to 50,000 tons. It is now apparent that \$15, in the Valleys, is the minimum, most of the sales being made at \$15.25 and some at \$15.50. In Foundry Iron the supply is short, with many producers announcing their withdrawal from the market for the remainder of the year. The price is now \$15 as a minimum for No. 2, in the Valleys, with some sales reported at \$15.25 for spot shipment and a large tonnage covered at \$15.50 for delivery through the first half of next year. One or two furnaces are holding for \$16, in the

Valleys, for No. 2, the price indicating the unwillingness of the concerns to sell at any price for the time being. The Coke market is stronger. Some Furnace Coke has been sold at \$2.65, at the oven, with some producers holding for \$2.75. The best grades of 72-hour Foundry Coke are quoted \$3.10 to \$3.25, at the oven, with \$3 the minimum. The car shortage is influential in the Coke market.

**Finished Iron and Steel.**—Renewed emphasis is being placed on the congested condition of the mills in some lines, the larger mills not being able to deliver Beams and Channels on new orders until the latter part of March or the first of April. A few mills in the East which have not been filled with business or which have purposely kept aloof from contracting are placing Shapes in this market at 1.85c. to 2c., at the mill. This with freight added makes the premium even over the advanced association price about \$5 a ton. The price is paid freely by consumers whose need is urgent. Jobbers in this territory report great difficulty in keeping stocks on hand. There is going to be a similar shortage in Bars. The larger mills are not able to promise deliveries even on choice specifications inside of four months. Some smaller mills have been selling Steel Bars on the old basis, but the point is being approached where an advance in the price to 1.60c. is generally expected, whether by agreement or by the initiative of individual mills. For the time being all sales are on the old basis of 1.50c., Pittsburgh, for both Bessemer and Open Hearth. Bar Iron is also scarce and the market is strong. Many of the mills are heavily sold up. Others are getting 1.70c. to 1.75c., Youngstown. The demand for Plates for shipbuilding and bridge work through this territory has been such as to limit the supply from the Central Western mills and deliveries are possible only after a long wait. The supply for immediate use is coming mainly from the Eastern mills, which have not sold their output so fully. The number of them having material for sale prevents anything like premiums for the time being. At the present rate of buying it is believed the point is rapidly being reached where an advance will be called for. Reports are heard of an expected advance to the same basis as Structural Steel, or 1.70c., Pittsburgh. For the time being sales are being made at 1.60c., at the mill. The weak spots in the market are Sheets and Pipe. There has been a slight improvement, but the market is no more than firm. It has been impossible to get the advance prices toward which the producers are working. Sheets out of stock are quoted at 2.05c. for No. 10 Blue Annealed, 2.55c. for No. 28 One Pass Cold Rolled and 3.55c. for No. 28 Galvanized as a basis. Billets are firm and in good demand at \$26 to \$27, Pittsburgh. Rails are in short supply and premiums are being offered, but buying is limited.

**Old Material.**—Buying shows signs of improvement and stocks are now being worked off. The market has stiffened considerably, with indications of higher prices immediately ahead. The following represent dealers' quotations to the trade, gross tons: Old Steel Rails, \$15.50 to \$16; Old Iron Rails, \$20 to \$21 (nominal); Old Car Wheels, \$16; Heavy Melting Steel, \$15.50. Net tons: Cast Borings, \$9; No. 1 Busheling, \$14; No. 1 Railroad Wrought, \$16; Iron Car Axles, \$21 to \$22; No. 1 Cast, \$14 to \$14.50; Stove Plate, \$10.50 to \$11; Iron and Steel Turnings and Drillings, \$10.50 to \$11.

## Cincinnati.

FIFTH AND MAIN STS., October 4, 1905.—(By Telegraph.)

**Pig Iron.**—The market during the past week has been strong, although the tonnage sold was considerably less. The buying has quieted down somewhat and individual sales have been smaller. The total of sales made during the week, however, has been far from inconsiderable and the strong features of the market yet remain. Present conditions, however, were anticipated, as it was a well defined fact that the strenuous work of the week preceding could not continue indefinitely. A large percentage of the sales were made for next year's delivery, as it is known that a very large proportion of consumers are covered for the remainder of the present year. A good inquiry has developed in the way of Mixing Irons—Ferromanganese, Ferrophosphorus and Ferrosilicon—and the market for these grades rules strong. Southern No. 2 is apparently well established at \$12.25, Birmingham, sales having been made, however, at 25c. above and below these figures. That there is less Iron to be had at the minimum quotation than at \$12.50 is almost an assured fact and the tendency is toward higher prices. Northern Iron is apparently stronger, the ruling quotation for No. 2 being from \$14.50 to \$15, furnace. We are told that several of the larger Southern furnaces are requiring agents to make specific inquiry before making contracts calling for any considerable tonnage. Basic has been moving rather freely during the week, but we are unable to find any sales of note in Foundry grades. One sale of 1500 tons of Northern, made to a concern in southern Ohio, was probably the largest. Freight rates from

Hanging Rock district to Cincinnati, \$1.15, and from Birmingham, \$2.75. We quote, f.o.b. Cincinnati, as follows:

Southern Coke, No. 1.....	\$15.50 to \$16.00
Southern Coke, No. 2.....	15.00 to 15.50
Southern Coke, No. 3.....	14.50 to 15.00
Southern Coke, No. 4.....	14.00 to 14.50
Southern Coke, No. 1 Soft.....	15.50 to 16.00
Southern Coke, No. 2 Soft.....	15.00 to 15.50
Southern Coke, Gray Forge.....	13.50 to 14.00
Southern Coke, Mottled.....	13.25 to 13.75
Ohio Silvery, No. 1.....	19.15 to 19.65
Lake Superior Coke, No. 1.....	16.15 to 16.65
Lake Superior Coke, No. 2.....	15.65 to 16.15
Lake Superior Coke, No. 3.....	15.15 to 15.65

*Car Wheel and Malleable Irons.*

Standard Southern Car Wheel.....	\$18.75 to \$19.25
Lake Superior Car Wheel and Malleable	18.25 to 18.75

**Coke.**—This market is strong, with prices slightly higher. A large tonnage of Furnace Coke is said to have been contracted for the next six months on a sliding scale basis. We quote best grades of Virginia Foundry Coke at \$2.75 for spot shipment and \$3 for next year's delivery. Furnace grades are strong at \$2.30 to \$2.35 for spot shipment and \$2.50 flat for next year.

**Finished Iron and Steel.**—The market is strong, with considerable inquiry developing. Prices remain unchanged. We quote, f.o.b. Cincinnati, as follows: Iron Bars, in carload lots, 1.65c., with half extras; the same in smaller lots, 1.90c., with full extras; Steel Bars, in carload lots, 1.63c., with half extras; the same in smaller lots, 1.85c., with full extras; Base Angles, 1.73c., in carload lots; Beams and Channels, in carload lots, 1.83c.; Plates, ¼-inch and heavier, 1.73c., in carload lots; in smaller lots, 1.90c.; Sheets, 16-gauge, in carload lots, 2.15c.; in smaller lots, 2.70c.; 14-gauge, in carload lots, 2.05c.; in smaller lots, 2.60c.; Steel Tire, ¾ x 3-16 and heavier, 1.83c., in carload lots.

**Old Material.**—The market for this class of material, in harmony with the Pig Iron market generally, is strong and firm. Dealers have secured a rather heavy tonnage recently, but are finding ready sales for all of it. Low Phosphorus Scrap is weak in this market, as there is very little of it used here. We quote dealers' prices, f.o.b. Cincinnati, as follows: No. 1 Railroad Wrought Scrap, \$16 to \$16.50 per net ton; No. 1 Cast Scrap, \$13 to \$13.50 per net ton; Iron Rails, \$19 to \$20 per gross ton; Steel Rails, rolling mill lengths, \$14 to \$14.50 per gross ton; Relaying Rails, 50-lb. and upward, \$23.50 to \$24 per gross ton; Iron Axles, \$21.50 to \$22 per net ton; Car Wheels, \$15.50 to \$16 per gross ton; Heavy Melting Scrap, \$14 to \$14.50 per gross ton; Low Phosphorus Scrap, \$17.50 to \$18 per gross ton.

## New York.

NEW YORK, October 4, 1905.

**Pig Iron.**—The general Foundry trade has purchased actively during the past week for delivery during the balance of the year and during the first quarter of 1906. A very considerable number of orders running from 1000 to 3000 tons each have been placed and there are inquiries in the market for additional quantities. Prices have stiffened and are liable to be further advanced. During the past ten days the furnaces of the Buffalo district, which have been below the parity of Lehigh Valley and Schuylkill makers for a long time, have advanced their prices, until now the different districts are more nearly on a level in such markets as New England. We quote Northern Iron, at tidewater, \$17.50 to \$18 for No. 1 Foundry, \$17 to \$17.50 for No. 2 Foundry, \$16.50 to \$16.75 for No. 2 Plain and \$15.75 to \$16 for Gray Forge. Southern Pig Iron is selling at \$16.75 to \$17 for No. 1 Foundry, and \$16.25 to \$16.50 for No. 2 Foundry, New York harbor.

**Steel Rails.**—It is understood that a part of the New York Central order has been placed, but that the balance is not yet finally awarded, although the makers have so made their arrangements that they can take care of it.

**Cast Iron Pipe.**—Although current orders are not running to large quantities they are sufficiently numerous to make a volume more than equal to the shipments. This is decidedly unusual so late in the season, especially as deliveries cannot be promised for some considerable time. The outlook for winter work is very good. Prices are firmly maintained at \$27.50 per net ton for carload lots of 6-inch, at tidewater.

**Finished Iron and Steel.**—The American Bridge Company reports new orders entered for the month of September totaling about 30,000 tons. While this quantity is not large, it is double the tonnage entered the previous month and therefore shows progress toward betterment. Fabricators of Structural Material state that they are now bidding on as large a tonnage as at any previous time in their history. Although nothing of special importance in this line was closed during the past week it is expected that active contracting cannot long be postponed. Some of the projects which are in contemplation must be begun in the near future and arrangements must be made for the material. Reports from the Plate trade continue to be extremely satisfactory,

showing that the Eastern mills are becoming still more fully supplied with orders. It is likely that within a short time those who depend upon quick shipments of Plates will not be able to secure such prompt deliveries as they have been favored with for some considerable time. The Bar trade is active and prices are steadily growing stronger, with greater premiums asked for early shipment. Quotations at tidewater for shipment from mills are as follows: Beams, Channels, Angles and Zees, 1.89½c. to 1.99½c.; Tees, 1.94½c. to 2.04½c.; Bulbs, Angles and Deck Beams, 1.90½c. to 2.09½c.; Sheared Tank Plates, 1.74½c. to 1.84½c.; Flange Plates, 1.84½c. to 1.94½c.; Marine Plates, 1.94½c. to 2.04½c.; Fire Box Plates, 2.04½c. to 2.60c., according to specifications; Refined Bar Iron, 1.74½c. to 1.79½c.; Soft Steel Bars, 1.64½c. to 1.74½c.

**Old Material.**—A very much better demand is reported for practically everything coming under this head. Cast Scrap is exceptionally strong, the demand coming quite generally from foundries in this territory. Among the sales which have been made are 1500 tons of No. 1 Machinery Cast and 1000 tons of Stove Plate, on which very satisfactory prices were realized by the sellers. Old Car Wheels are the object of active inquiry. A much heavier inquiry is also noted for Rolling Mill Stock. Cast Borings are in abundant supply, but this does not seem to affect their price seriously. While the Steel works are generally disposed to proceed cautiously, endeavoring to purchase at prices which will not excite the Scrap market, some good sales have been made, among which are noted 2000 tons of Scrap Steel Rails and 2000 tons of Heavy Melting Scrap, for which it is stated that \$16.75 was paid for delivery at works in eastern Pennsylvania. A feature of the Steel Scrap situation is that consumers are asking options for a few days on material offered. Conditions are such that a general buying movement of this class of Scrap is regarded as a question of only a short time. Relaying Rails are the subject of very wide inquiry, but practically none is to be had. Quotations for New York and vicinity are approximately as follows in gross tons:

Old Iron Rails.....	\$19.50 to \$20.00
Relaying Steel Rails.....	23.50 to 24.50
Old Steel Rails, rerolling lengths.....	15.00 to 16.00
Old Steel Rails, short pieces.....	14.75 to 15.25
Heavy Melting Steel Scrap.....	14.75 to 15.25
Old Iron Car Axles.....	21.00 to 22.00
Old Steel Car Axles.....	18.50 to 19.50
No. 1 Railroad Wrought.....	19.50 to 20.00
Iron Track Scrap.....	16.50 to 17.50
No. 1 Yard Wrought.....	17.25 to 18.25
Wrought Pipe.....	14.00 to 15.00
Ordinary Light Iron.....	10.00 to 11.00
Cast Borings.....	8.50 to 9.50
Wrought Turnings.....	12.00 to 13.00
Old Car Wheels.....	16.50 to 17.50
No. 1 Machinery Cast.....	15.00 to 16.00
Stove Plate.....	12.75 to 13.25
Railroad Malleable Cast.....	14.75 to 15.75

## Metal Market.

NEW YORK, October 4, 1905.

**Pig Tin.**—It would appear at first glance that the Tin situation during the week presented a rather curious anomaly. On Wednesday of last week most excellent business developed, consumers taking between 200 and 250 tons at prices varying from 32.05c. to 32.15c. This Tin came from speculative holders, and the cleaning up of this outside lot gives the market more stability. Prices have consequently advanced from day to day. The statistics as compiled by C. Mayer, secretary of the New York Metal Exchange, show that the visible supply for the United States increased 1936 tons, as compared with the end of the previous month. The following figures show the compiled statistics:

	Tons.
Total visible supply September 30, 1905.....	14,508
Against visible supply August 31, 1905.....	12,572
Against visible supply September 30, 1904.....	13,159
Against visible supply December 31, 1904.....	14,768

These statistics being entirely favorable to consumers, it would naturally be supposed that the market would decline. The reverse, however, was the result of speculation in London, in which the bulls have a very good club in the fact that obstructions in the Suez Canal will retard shipments about eight days. The price to-day is higher at 32.50c. for spot. In London the same is true, spot being quoted at £148 7s. 6d., while futures are quoted at £148 7s. 6d.

**Copper.**—The buoyant state of the market is only partially reflected in the ¼c. advance of the Metal Exchange's quotations. There is a good demand from all parts of the country and consumers who must have immediate shipments of Lake and Electrolytic are forced to pay around 16.62½c., with special brands being quoted from ¼c. to ½c. higher. Deliveries for November and December can be obtained at 16½c., while spot shipments of Casting grades are held firmly at 16.37½c. In London the market for standard warrants has advanced 15s., the closing quotation to-day being £71 7s. 6d. Statistics compiled by C. Mayer, secretary of the New York Metal Exchange, show that the



exports of domestic Copper from Atlantic ports for the month of September were 17,780 tons. The total exports since the first of the year, exclusive of Southern and Pacific ports for September, aggregate 188,751 tons, against 179,009 tons for the corresponding period in 1904.

**Spelter.**—The price has advanced and the tone of the Spelter market is much firmer, with spot September and October deliveries quoted at 6c. to 6.10c., New York City. In St. Louis the market is quiet at 5.85c. The price on Zinc Ore has been again advanced \$2 per ton in the Joplin district. It is understood that during the week some sales were made on a much higher basis than the prices quoted above. The London market has again advanced and now rules firm at £27 12s. 6d.

**Pig Lead.**—Considerable Lead has been sold during the week, and although prices remain on a basis of 4.85c. to 4.90c., New York delivery, these are very firmly maintained. Some sales of round lots have been made at 5c. The American Smelting & Refining Company continues to quote shipment Lead in 50-ton lots at 4.85c. In St. Louis the market has advanced and closes firm at 4.82½c. Soft Spanish Lead is quoted in London at £14 10s., an advance of 7s. 6d. since last week.

**Antimony.**—The market is lower again this week, Hallitt's being quoted at 12.50c. to 13c., Cookson's at 13c. to 13.25c. and other brands at 11.50c. to 12c. Official reports show that the imports of both Antimony and Antimony Ores have decreased considerably the first eight months in 1905 as compared with the corresponding period last year.

**Quicksilver.**—A slight reduction in price has taken place, \$40 being quoted for flasks of 75 lbs. in 100-flask lots. In San Francisco domestic orders are held at \$39. The London market is unchanged at £7 2s. 6d.

**Nickel.**—There is no change in the market, large lots being quoted at 40c. to 45c.; less than ton lots at 50c. to 60c.

**Tin Plate.**—Practically the only weakness in the entire list is reflected in the Tin Plate market. Although the official quotations are unchanged at \$3.74 a box for 100-lb. IC Coke Plates, f.o.b. New York, and \$3.55, f.o.b. Pittsburgh, these prices are being shaded to the extent of 15c. to 25c. a box. In Swansea Welsh Plates are 3 pence higher, at 12 shillings, due to an advance in Iron.

### Iron and Industrial Stocks.

NEW YORK, October 4, 1905.

The week has been marked by decided strength in practically all of the iron and industrial stocks. Some of the advances made have been quite important. The following range of highest and lowest prices since last Thursday shows the extremes which were reached: United States Steel common 37½ to 39, preferred 104 to 105½; United States Cast Iron Pipe common 30 to 39¼, preferred 91¼ to 95; Tennessee Coal 85¼ to 89; Sloss-Sheffield common 68½ to 71½; Republic common 22¼ to 24¼, preferred 90 to 94; Railway Spring common 39 to 48; Pressed Steel common 44 to 46½; Colorado Fuel 43½ to 47½; Cambria Steel 28¾ to 29¾; Steel Foundries common 9¼ to 10¼, preferred 39 to 40¼; Locomotive common 52 to 55¼; Car and Foundry common 35¼ to 38½; Can preferred 70½ to 73. The most impressive influence in advancing prices on this class of stocks was the unexpected declaration of a 2 per cent. dividend on Railway Spring common on Friday, which placed that stock on a 4 per cent. basis per annum. The great advance in United States Cast Iron Pipe common, however, is due to a report that this stock is also to be placed on a dividend basis, but an almost official denial is made that such action is contemplated in the immediate future. The most interesting fact in connection with the advances in these stocks is that they have taken place in the face of much higher interest rates on money. Last transactions up to 1.30 p.m. to-day on active stocks are reported at the following prices: Can common 11½, preferred 72¼; Car & Foundry common 38, preferred 100¾; Locomotive common 54½, preferred 113¾; Steel Foundries common 10½, preferred 40¼; Colorado Fuel 46½; Pressed Steel common 46, preferred 96½; Railway Spring common 46, preferred 102½; Republic common 24¾, preferred 93¾; Sloss-Sheffield common 72, preferred 107; Tennessee Coal 88¾; United States Cast Iron Pipe common 37¼, preferred 95; United States Steel common 38¾, preferred 105¾.

The Tennessee Coal, Iron & Railroad Company reports for the five months ended May 31 last: Net earnings from operations, \$733,862; interest on bonds, dividends on guaranteed securities and premium on securities purchased, \$320,099; balance, \$413,763; amounts credited to royalty and replacement funds to provide for depreciation, \$89,979; surplus, \$323,784; previous surplus, \$2,122,335; total surplus, \$2,446,119; dividends, \$230,095; final surplus, \$2,216,024.

The American Car & Foundry Company reports its net earnings from operation for the period ending July 31, 1905, as follows:

Balance as per sixth annual report for year ending April 30, 1905.....	\$12,755,434.27
Less dividend on preferred stock for two months ending April 30 (at the rate of 7 per cent. per annum), 1 1-6 per cent.....	350,000.00
Surplus, April 30, 1905.....	\$12,405,434.27
Net earnings for quarter ending July 31, 1905.....	\$625,311.81
Dividend on the preferred stock at the rate of 1½ per cent. per quarter for the same period.....	525,000.00

Surplus earnings for the quarter..... \$100,311.81

Total surplus, not including August and September earnings.....\$12,505,746.08

**Dividends.**—Railway Steel Spring Company has declared a semiannual dividend of 2 per cent. on the common stock, payable October 19.

La Belle Iron Works has declared the regular quarterly dividend of 1¼ per cent., payable November 1.

E. W. Bliss Company paid a quarterly dividend of 2½ per cent. on the common stock and 2 per cent. on the preferred stock October 2.

Westinghouse Machine Company has declared the regular quarterly dividend of 2½ per cent., payable October 10.

People's Natural Gas & Pipe Company, Pittsburgh, has declared a quarterly dividend of 2 per cent.

Tuthill Spring Company, Chicago, has declared its regular annual dividend of 8 per cent.

The Manufacturers' Light & Heat Company, Pittsburgh, supplier of natural gas, has declared the regular quarterly dividend of 1½ per cent., payable October 20.

The Union Switch and Signal Company, Pittsburgh, has declared quarterly dividends of 2 per cent. on the common and 2½ per cent. on the preferred stock, payable October 10.

Allegheny Heating Company, Allegheny, Pa., supplier of natural gas, has declared the usual quarterly dividend of 3 per cent.

**American Roofing Tin in China.**—England has heretofore practically controlled the sale of terne or roofing plates to other countries than the United States, but a notable instance of American progressiveness is reported by the Merchant & Evans Company, successor to Merchant & Co., Incorporated. This company, whose main office and works are located at Philadelphia, with branch warehouses in New York, Chicago, Baltimore, Brooklyn and Kansas City, reports that its Chicago office has completed shipments amounting to 30,000 square feet of its celebrated Merchant's Old Method roofing tin for the American Legation buildings at Pekin, China. The selection of this brand for such important buildings was carefully considered, and it is possible that the introduction of American made high grade terne plates in the capital of the Chinese Empire may lead to other business with the most conservative nation in the world.

The Siegerland Pig Iron Syndicate, Germany, recently booked a large order for spiegeleisen for shipment to the United States, and negotiations were in progress two weeks ago for further business. It is stated, however, that in view of the increased demand at home upon the syndicate, which will lead to the removal of the limitation on output, there is no inducement for the sale of spiegeleisen to the United States at the low prices made on the recent order.

The largest arc searchlight in Europe is under construction for the Russian Government by the Siemens-Schuckert Company. It has an arc lamp consuming about 200 amperes and giving 310,000,000 candle-power. The reflector is a parabolic mirror of silvered glass more than 6 feet in diameter. The arc carbons are 1.9 and 1.4 inches in diameter, respectively. The great searchlight at Heligoland, which has long been used as a standard for great size and power, has a mirror 30 inches in diameter, requires 35 amperes and gives 30,000,000 candle-power.

Reports were incorrect that a meeting of the independent sheet and tin plate manufacturers would be held in Pittsburgh on October 4. It is a fact that the independent sheet and tin plate mills have an association, but it meets only every two or three months and does not attempt to control prices or regulate wage matters in any way. No meeting of the association has been held for some time and none is likely to be held in the near future.



## The Machinery Trade.

NEW YORK, October 4, 1905.

With the machinery trade, business during the month just closed was very satisfactory, both as regards orders and inquiries, the volume of the former being quite large. While there were some instances of what might be called a boom in certain branches of the trade, taken as a whole business was very steady, the amount of transactions varying but little from week to week. During the past two months there has been a steady growth of the machinery trade, and, though the past week has seen a slight falling off in orders, the prospects for October are exceedingly bright. Many of the large manufacturers have orders on hand far beyond their capacity, and their agents are clamoring for tools for stock, claiming that they cannot make sales without sufficient tools to show. While it is very gratifying to the producer to have his capacity sold for months ahead, nevertheless he would like to keep his agencies supplied with the necessary machinery, that his business may not become too contracted. No one knows more than he of the advantages of having his products distributed throughout the country through the medium of the various agencies. It is the same old question of being in a position to command the volume of small orders when the large purchasers shall have supplied their requirements. To provide their agencies with the requisite amount of stock and to fill orders on hand some companies are making an especial effort to increase their capacity, realizing the necessity of having their tools on exhibition at numerous points throughout the country and ready for quick delivery to the concerns that buy a machine now and then. As a rule, a man wishing to purchase a single tool is in need of it right away, and while he may prefer a certain make, if he cannot get it within a month or two he very often will buy another make of tool. One large concern has already suffered to some extent because of just such a condition. In the same locality where it is doing a large business in all lines but one it was found that it was not receiving its share of orders for that one line because its agent had not the tools to show and deliver.

The large demand for certain tools is best demonstrated by the increase in sales of one of the important manufacturers. During the past several months the company has been selling from \$30,000 to \$40,000 worth of lathes of one size per month.

Charles Le Chatelier, representing Société Française des Constructions Mécaniques, builder of large steam and gas engines, Denain, France, is now in New York, visiting the machinery trade and gathering data on American machines. It is thought that Mr. Chatelier's visit will result in the purchase of considerable machinery from manufacturers in this country, probably through the European agencies. Mr. Chatelier will stay in this country two or three weeks, and will visit New England and Western manufacturers.

The Hudson & Manhattan Railroad Company has begun condemnation proceedings to acquire title to property on Cortlandt, Fulton and Dey streets, New York, and the indications are that the terminal of the Cortlandt street tunnel under the North River is to be much larger than was originally intended. It is understood that the company will erect a tall office building on the site to surmount the terminal and loop which will connect the company's two tunnels. Plans are already under way for the building, which will in all probability be 22 stories in height and will cost about \$3,000,000.

Dealers in heavy machinery who make a specialty of export trade have been securing a number of orders of late from Russia. It is understood that most of the machinery was sold to the Government, and a number of shipments have been ordered for St. Petersburg.

### Important Machinery Requirements.

There has been very little buying of machinery in this district by railroads during the past week. The Chesapeake & Ohio Railroad, however, has purchased quite a few tools for its shops at Covington, Ky., and Huntington, W. Va.

For some time past the machinery trade in this section has been following up the projected new plant of the American Cast Iron Pipe Company, Birmingham, Ala., which was organized a few months ago, and present indications are that substantial orders for equipment will soon be placed. While the plans have not yet been completed for all the buildings, the main foundry will be 100 x 336 feet, with brick walls and steel structural roof, covered with corrugated iron, which will be equipped with eight electric jib cranes of from 10 to 15 tons capacity. The company will be in the market for four 100 horse-power tubular boilers, one 100 horse-power Corliss engine, one 150-kw. dynamo, direct connected to high speed engine, and a quantity of machine tools, wood working machinery, &c. The construction and equipment of the plant is in charge of E. E. Linthicum, general manager.

The W. P. Davis Machine Company, Rochester, N. Y., which has for some time been in need of larger facilities for handling its business, has purchased a site upon which it intends to erect a plant, the construction and equipment

of which will cost in the neighborhood of \$100,000. The property is located just north of the New York Central Railroad tracks, and has a frontage on St. Paul street of 196 feet, running back 300 feet to the river bank. Work of tearing down the buildings now on the property is to be begun at once and new buildings of brick and steel erected which will contain 60,000 square feet of floor space. A spur from the New York Central tracks will run through the property, the buildings to be erected on either side. There will be a machinery store, 40 x 160 feet, three stories high, just north of the spur and fronting on the street. Next to this will be the main factory building, which will have a frontage of 160 feet, extending back 142 feet. This building will be one-story in height, and will be equipped with all modern machinery, including a 20-ton traveling crane. On the opposite side of the tracks will be a repair shop, 50 x 100 feet, and a storage warehouse, one-story, 40 x 140 feet. The entire plant will be lighted by numerous windows and skylights. It is expected that the new plant will be ready for operation within a year.

A large plot of ground upon part of which there is a brick building adjoining its works has been purchased by the Morris Machine Works, Baldwinsville, N. Y., which intends to erect thereon new buildings which will about double the capacity of its present machine shop. The company intends to erect two buildings, both of which will be used as machine shops. The first building to be constructed will be 35 x 216 feet, and upon the completion of this building the other one, 58 x 150 feet, will be immediately erected. The company has not yet taken up the question of what new tools it will require for the shops, but it will have to purchase quite a lot of new machinery. The brick building now on the property will probably be remodeled later on for a pattern and wood shop, though no decision will be made for some time as to the use this building will be put.

A complete equipment will be required by the Bucyrus Steel Casting Company, Bucyrus, Ohio, which is to erect a foundry 130 x 300 feet for the manufacture of steel castings. The plant will be equipped throughout with the latest modern improvements. No machinery has been purchased as yet.

The Nettleton Mfg. Company, Middletown, Conn., which has just begun the manufacture of Nettleton reversible metal nippers, has installed most of its machinery, but is still in the market for drill presses, a milling machine and tool grinder.

Some inquiries have been made in the market for machinery by the Fagan Iron Works, whose main offices are at Hoboken, and it is probable that before long the company will make some purchases to replace the machinery which was recently destroyed by the fire in the company's plant at Jersey City. The loss to the company at that time was about \$100,000, and a large amount of machinery will have to be bought to put the plant in the condition it was before the fire.

Gear cutters, boring mills, lathes and general machine shop equipment to the amount of \$50,000 will be installed in the new plant of the Morse Chain Company at Ithaca, N. Y. A greater portion of this machinery has already been purchased in New York. The plant which the company is building at Ithaca and which will be operated in conjunction with its present one at Trumansburg, N. Y., will consist of a main building 64 x 303 feet, three stories, which will contain the general offices. The first floor will be used for the machine shop, a floor space of 64 x 236 feet having been set apart for that purpose. The machine shop will be equipped with 10-ton electric traveling cranes. The other buildings will all be of one story and will comprise a foundry, 68 x 135 feet; forge shop, 36 x 86 feet; pattern shop, 28 x 82 feet, and power house, 45 x 105 feet. The foundry will be equipped with electric traveling cranes of 15 tons capacity and 50 feet span. Steel and concrete have been used throughout in the construction of the plant and everything has been done to provide for an equipment in keeping with the advance machine shop practice of the time.

Considerable machinery will in all probability be purchased by the Brunswick-Balke-Collender Company, New York, to equip a new plant which is to be constructed at Long Island City. The building, which it is estimated will cost \$225,000, is to be a four-story and basement concrete, brick and steel structure, with a frontage of 200 feet on Review avenue, 207 feet on Marsh street and 103 feet on Fox street. The building will be 60 feet in height from curb to roof. Walter Kidde, mechanical engineer, with offices at 95 Liberty street, has the details of fitting up the plant in charge.

Gustave Steinhart will shortly have erected on McWhorter street, south of Kinney street, Newark, N. J., a three-story factory, of mill construction, which is to be used for finishing fine leather. The building will cost in the neighborhood of \$25,000, and there will be a separate engine room and boiler house, and the company will require a power plant and leather working machinery. Nathan Myers, who is the architect in charge of the work, is also preparing plans for a new grinding and forge building for

the Compton Shear Works, to be erected on Camden street, Newark.

The Mesta Machine Company has sold through its New York office to the Randolph-Clowes Company, Waterbury, Conn., a 700 horse-power horizontal vertical Corliss engine.

## Chicago Machinery Market.

CHICAGO, ILL., October 3, 1905.

Western machine tool builders without exception are busier than at any time during the past two years and plants generally are operating double turn, and notwithstanding this increased output are unable to make prompt deliveries. Export trade, not only to European countries but to China and Australia, has increased in almost the same proportion as the domestic demand, while heavy shipments are shortly to be made to Colon, Panama, consigned to the Isthmian Canal Commission, a few carloads of machinery already having gone forward. The demand for drills and lathes is general and is not confined to one line of trade. In boring mills of large sizes the manufacturers are unable to supply the demand and they are behind on deliveries from three to six months. The large amount of work that is in the structural building shops throughout the West has created a big market for punches and shears and the manufacturers of these tools have heavy orders on their books. Nor is the demand for these tools limited to the structural building shops alone, as the railroads, implement and vehicle manufacturers are placing big orders. Electrical manufacturers are having a big run on motors for machine tool drives, and one Western manufacturer recently received contracts for equipping two large railroad machine shops in the East with motor drive throughout. Stocks of these smaller motors have been practically depleted and the floors of these electrical plants are full of work requiring prompt delivery. Manufacturers of machine tools are experiencing much difficulty in securing castings where they do not operate their own foundries and in securing iron where they do.

Dealers on "Machinery Row" report sales during the month of September larger than any month in the past two years. The demand generally is for moderate sized equipment, such as is required by the general run of small machine shops throughout the country. Eastern manufacturers as well as those in the West are behind on deliveries on lathes, planers, drills and boring mills, and as most of the tools desired now are for quick shipment second-hand machinery is in many instances replacing new requirements.

The 'Frisco System is erecting new shops at Memphis, Tenn., comprising machine shop, roundhouse, blacksmith shop, mill shop, boiler house and storehouse. The machine shop will be 208 feet long and 136 feet wide. It will be of brick construction, with timber framing, and will have four engine pits—two 40 feet long and the other two 80 feet long. The roundhouse will adjoin the machine shop, tracks leading from the former into the latter. The blacksmith shop will also adjoin the machine shop and will be 93 feet long and 40 feet wide. A sand house will be erected near the roundhouse and will be 16 x 50 feet. The contract for the erection of the machine shop has already been awarded to L. B. Wright of St. Louis. The mechanical department of the 'Frisco System is now arranging for the equipment to be installed in both the machine and blacksmith shops, and a large number of machine tools of all kinds as well as blacksmiths' forges, hammers, &c., will be required. The mill shop, boiler house and storehouse will be similar in construction to the machine shop, and the contracts for the erection of these buildings have been awarded to George J. Goodlander of Kansas City. The mill shop will be 60 x 100 feet, boiler house 28 x 76 feet and the storehouse 40 x 120 feet.

Frank W. Williams & Co., manufacturers of picture frames, Chicago, are in the market for a high pressure boiler from 80 to 100 horse-power and an engine of from 50 to 75 horse-power.

The Crescent Company, Chicago, will buy a few small punch presses.

The Swedish-American Telephone Company, Chicago, will purchase Brown & Sharpe screw machines No. 0 and No. 2.

The Chicago Chatelaine Bag Company, Chicago, requires an air compressor, 30 feet free air and over.

Thos. Q. Andrzyk, Chicago, wants a Barnes foot power or bench lathe, 9-inch swing.

The Winget Concrete Machine Company, Columbus, Ohio, will remove its manufacturing plant to Plain City, Ohio, where a factory building 125 x 150 feet will be erected on a site bounded by Harris and Guy avenues, Elizabeth street and the Pennsylvania Railroad. The general offices of the company and a demonstrating room will be retained at Columbus. Eli Rowles is president and treasurer, J. M. McDowell vice-president and M. Fay McDowell secretary.

Howard C. Black and other Plain City business men are interested in the company as stockholders.

The B. F. Barnes Company, Rockford, Ill., manufacturer of drills, lathes and grinders, in addition to a heavy domestic demand for its product is enjoying a heavy export trade. Last week a carload of drills and lathes was shipped to New York for export to France, Germany, Italy, Scotland, China and Australia. Recently a carload of drills was shipped from the company's plant to Colon, Panama, consigned to the Isthmian Canal Commission.

The American Car & Foundry Company has recently added to its equipment at the Madison plant, Granite City, Ill., for the construction of steel and composite cars, 100 Boyer long stroke riveting hammers manufactured by the Chicago Pneumatic Tool Company, the order for the above number of hammers mentioned being forwarded after a careful test of all the various makes of riveting hammers on the market. The Chicago Pneumatic Tool Company reports business good and the prospects for the remainder of the year very bright.

The Rock Island Coal Company, Hartshome, I. T., expects to install the following equipment at its mines: 100-kw. electric plant, including engine, 125 horse-power return tubular boiler and two chain mining machines, at Mine 7, Hartshome; additional 100-kw. electric plant, including engine, two 125 horse-power return tubular boilers, box car loader and conveyor to boiler room, electric locomotive and slope hoist, track scales and additional track for empty railroad cars, at Mine 8, Hartshome; box car loader, automatic stokers and mining machines at Mine 5, Alderson, I. T. Edward H. Coxe is superintendent.

Contracts for equipment for the new packing plant of the Western Packing & Provision Company, Chicago, have been let as follows: Two 100-ton Linde refrigerating machines, Fred. W. Wolf Company, Chicago, direct connected to two 22 x 42 Murray rolling mill type engines built by the Murray Iron Works, Burlington, Iowa; air circulating system by direct expansion in the cooling rooms of the first and second floors, the third and fourth floors being cooled by the fan system; three 200 horse-power Stirling water tube boilers, complete with traveling chain grates; one 200-kw. alternating current generator and one 75-kw. generator for direct connection to engines of similar size, with 14 inductive motors ranging from 5 to 25 horse-power for direct connection to four valve engines of proportionate size, all of the Burke type, built at Erie, Pa.; boiler feed water heater of 800 horse-power, Power Specialty Company, New York City; two boiler feed water pumps and two low heating pumps, Advance Packing & Supply Company, Chicago; a 500-gallon fire underwriters' pump from the Knowles Steam Pump Company; six 6 x 12 rendering tanks from the Hamler Boiler & Tank Company, Chicago. The plant is being erected on a 10-acre site and comprises a main building, four stories and loft, 118 x 208 feet.

The Superior Construction Company, Houghton, Mich., is preparing plans for a municipal lighting plant for L'Anse, Mich. The equipment will include a power house, 100 horse-power boiler, 75 horse-power engine, 60-kw. alternating current generator, switchboard transformer and arc lights.

The Commonwealth Power Company, Kalamazoo, Mich., will build a power plant near Ceresco, Mich., for the development of 1200 horse-power. Correspondence may be addressed to J. B. Foote, Jackson, Mich.

## Cincinnati Machinery Market.

CINCINNATI, OHIO, October 3, 1905.

The shops of the various machine tool industries throughout the city present a very active appearance, and trade continues up to the standard. No exceptions are to be found to this general rule, and all are of the unanimous opinion that thus far the year has been far ahead of expectations. There are no special features visible in this movement, each concern having all it can do along ordinary lines. What comment is made is in the nature of more or less surprise at the manner with which foreign demand has increased and grown during the year. Prices for the different kinds of tools appear to be fairly well established, with a growing tendency on the part of a number of builders to raise the schedule higher. Whether this can be accomplished under present conditions is a matter of doubt in the minds of some, but that such is the intention there seems to be little question, as the National Machine Tool Builders' Association will take this subject up at its meeting this month in New York.

The J. A. Fay & Egan Company says that owing to the constantly increasing demand for its tools in the wood working machinery line it has found it necessary to again increase the capacity of its already large plant. Adjacent to the office building is now in process of completion a large five-story addition 100 feet square, containing about 50,000 square feet of floor space, equipped with freight and passenger electric elevators, cement floors, automatic sprin-



klers and all of the modern improvements. This building will be used principally for a warehouse, and showrooms will be arranged to facilitate handling of the large train of customers which constantly come to the plant to buy direct. While this addition will greatly increase the capacity of already the largest plant of its kind in the world, the company could easily double the space the shops now occupy. However, limited land around that part of the city prevents them from acquiring more property than the above mentioned lot.

The Sebastian Lathe Company reports one of the best years in its history, with heavy developments along foreign lines. Shipments are being made to South America, Australia, England, Russia and the Continent of Europe. Prices are being firmly maintained and no stock accumulated.

Greaves, Klusman & Co., in line with the balance, are having all that they can do. With the additional floor space they have recently added to their plant they are better able to take care of the trade and in a measure keep abreast of orders. Foreign trade is said to be increasing.

The John Steptoe Shaper Company reports a full order book. It is not so much a question of selling tools as it is of delivering them as soon as required. No change in prices is reported, the market showing great strength.

The Cincinnati Machine Tool Company says that during the past week it has received some very flattering orders. Mention was made in these columns several weeks since that it had recently added a large grinder for polishing the columns of its tools. Since then it has added another one of similar type but smaller that will be used in grinding the smaller parts of the tools, thereby greatly facilitating the work of the plant.

The Bickford Drill & Tool Company is finding it difficult to make the tools shown on its order book and at the same time ship them as promptly as desired. The year has been very satisfactory, and it has been able to find a market for its tools in places hitherto undeveloped.

## Philadelphia Machinery Market.

PHILADELPHIA, PA., October 3, 1905.

A large quantity of orders for both tools and machinery have come out during the past month, and both manufacturers and dealers are well satisfied with the amount of business transacted. Slight gains have been made in the volume taken during the past week and many manufacturers of tools as well as other lines which may be classed under the general head of machinery have found after figuring up the business taken during the past nine months that they have exceeded the total volume of business taken during the entire year of 1904, and as the next three months promise to be quite active the year's business should on the whole prove to be very satisfactory as well as profitable.

New business continues to come out quite freely, but orders are generally small, the volume of business taken being made up of the quantity rather than individual size. Specifications requiring a large number of tools for any one concern are scarce.

There has been somewhat of a let-up on very large plant extensions in this territory, and most of the business recently placed has been coming from the railroads and from concerns requiring a few tools for minor extensions or for general replacement of present equipment.

Inquiries for all classes of tools and machinery are increasing, and estimating departments are being rushed in order that the demands of prospective purchasers may be promptly attended to. There appears to be less hesitancy on the part of buyers to place orders promptly, as it is now pretty well understood that deliveries on almost all classes of tools and machinery must harden if the present demand be continued. The ability to make prompt shipments continues to be an important factor in the sale of many tools, particularly as some manufacturers have already booked orders enough to keep them busy well up to the end of the year. The railroads, notwithstanding their extensive purchases of rolling stock and motive power, are in many instances finding themselves unable to handle promptly all the freight business offered, and it is expected that more or less congestion will take place on some of the lines. This condition at times is an important one to many manufacturers, its effect being noticeable not only in the delivery of raw materials entering into the construction of various tools, &c., but also in the delays incident to delivery after leaving the builders' shops. Some of the railroads are now trying to overcome this difficulty, and a number of Eastern roads are considering the enforcement of an order which will not permit cars of various roads going off their own lines. If this were rigidly enforced considerable difficulty would no doubt arise, particularly for the shipper of through freight.

Engines and boilers of the medium sizes are in better demand and some good orders have been taken. Second-hand machinery merchants are booking considerable more business and in some cases are being pushed to the utmost in order to meet the demands of their various customers.

The Eynon & Evans Mfg. Company is making several improvements in its brass foundry. New furnaces of its

own design are to be built, while others using oil fuel have been installed, as has also the necessary machinery connected with the use of oil as fuel. This company keeps busy in all departments, the largest increase recently being noticeable in the pattern department, which now has a large amount of work on hand. The demand for steam jet blowers and for condensers is particularly good and a number of the former have been exported to Canada, while both blowers and condensers are being furnished many domestic customers.

Manning, Maxwell & Moore, through their local office, have taken orders for the entire machine shop equipment to be placed on the battle ship New Hampshire, being built by the New York Shipbuilding Company, Camden, N. J., for the United States Government. They have also taken orders for several medium size plant equipments and find the general demand for machinery and tools to be quite good, with an excellent outlook for business during the remainder of the year.

The Link-Belt Engineering Company notes a good demand for its line of conveying machinery and other specialties. Foreign business continues good and a number of orders have been taken for sugar cane and bagasse handling machinery for delivery in Cuba. A number of orders have also been taken for coal handling and storage machinery, particularly from the anthracite coal districts. General orders are also coming in freely, among which may be mentioned special telescopic ash handling machinery, electrically driven, for installation in the City Hall in this city, and a special newspaper carrying apparatus for the Philadelphia Record.

The Standard Pressed Steel Company, manufacturer of the American Pioneer pressed steel shaft hanger, has just completed an arrangement with H. Glaenzer & Perreaud, Paris, France, to represent it in that country. This company notes an increased demand for hangers, both from foreign and domestic sources. Recent export deliveries include shipments to Holland, Sweden, France, Spain and Peru, South America, while those to domestic parties include shipments to different sections of the United States. A recent order taken was for the entire equipment of hangers for use in the machine shops on the United States battle ship New Hampshire, being built by the New York Shipbuilding Company, Camden, N. J.

Frank Toomey notes an increased demand for second-hand tools, machinery and boilers and is now quite busy in every department of the business. A number of Manning boilers, 150 horse-power capacity each, have recently been sold, two of which were for the Standard Roller Bearing Company of this city. Among recent purchases by this party was the complete equipment of the Fairmount Steel Forge Company of this city, which included a number of hammers, boilers, engines, &c. Several Corliss engines, both plain and cross compound, have also been recently purchased by the above.

The Tabor Mfg. Company, manufacturer of foundry molding machines, has had a very satisfactory month's business, the best, in fact, in the history of the company. Orders have been taken in quantity for power ramming, plain Draper and split pattern machines, both for the domestic and the foreign trade, among which were three 12-inch power ramming machines for New York parties, one for Wisconsin and one for a New Jersey foundry. A 16-inch power ramming machine has been ordered by California parties and a 16 x 16 inch power ramming split pattern machine will be shipped a Baltimore, Md., foundry. Export deliveries have been good and include among others an 18 x 22 inch split pattern machine for a party in England. The company also notes a good demand for Taylor-Newbold inserted tooth cold saws, a large number of which, ranging from 6 to 40 inches in diameter, have been shipped various customers.

The Newton Machine Tool Works has had a good month's business. The demand for cold saws has increased, as has also that for the heavier classes of machine tools. All the departments of the plant have been uniformly busy, and the prospect for business during the remainder of the year is considered very promising. Among recent orders taken by this company were two No. 2 key seat milling machines, one for New York and one for local parties; two No. 1 steel foundry saws for delivery in the Chicago territory; three electric driven and two belt driven No. 2 combination cold saws for nearby parties, two rotary planers, one 36-inch and one 50-inch, on round bases; three automatic saw sharpening machines; two horizontal boring machines, with 5-inch spindles, for railroad work, and a number of other tools. Deliveries by this company have been heavy, and include a heavy duplex milling machine, weighing 43,000 pounds, with a speed range of 6 to 1 through gearing and 10 changes of geared feed, with quick power movement in both directions, the machine being fully controlled from either side. A 50-inch portable rotary planer has been furnished a large electrical plant; eight cold saw cutting off machines and three automatic saw sharpening machines have been furnished various customers, as have also two rail drilling machines, a heavy slab milling machine and a special steel foundry shaper.



## Cleveland Machinery Market.

CLEVELAND, OHIO, October 3, 1905.

Dealers and manufacturers in all branches of the machinery business state that business is better than it has been in some time, but there is the same old story that few large equipments are being sold and that the new business is confined largely to replacements and renewals. The complaint of poor deliveries seems to be growing worse among dealers. They are taking a fine lot of orders, but many of them are canceled or have to be turned down because the factories cannot make prompt deliveries. This is particularly true of Cincinnati manufacturers of tools. Manufacturers of automobiles in particular have been holding off buying new tools until they sized up the season's requirements, and now they want the machinery in a big hurry, but on many tools they cannot secure deliveries before January and February. The sale of second-hand machinery is very brisk and some changes have recently taken place in concerns making a specialty of this line.

William A. Reade & Co., Chamber of Commerce Building, who formerly handled second-hand machinery, are now paying exclusive attention to the sale of complete plants. Several quite important transactions have recently been closed up. The plant of the American Foundry & Machine Company at Ravenna, Ohio, has been sold to the Reeves Centrifugal Engine Company, Pittsburgh, which will build centrifugal engines and will improve the plant for this work. The plant of the Ideal Foundry Company at Ashtabula, Ohio, has been sold to O. C. Eben, who will make improvements and will do general work in gray iron castings. The plant of the Zanesville Malleable Iron Company, Zanesville, Ohio, was sold last week to Pittsburgh parties, who will operate it. This is a fine, well equipped malleable iron plant, built in 1902.

The Sandusky Portland Cement Company, Sandusky and Cleveland, has purchased a large tract of limestone land at Dixon, Ill., and will commence work immediately on the erection of a \$750,000 cement plant. The main building will be 300 x 1200 feet and the plant will have a capacity of 2000 barrels daily. A large amount of structural iron work will be required and a power plant of about 3000 horse-power will be installed. All machinery will be driven by individual motors. Officers of the company are: A. St. John Newberry, Cleveland, president; E. J. Maguire, Cleveland, secretary, and S. P. Newberry, Sandusky, general manager. The latter will have charge of purchasing material and the company will do its own engineering work.

Bardons & Oliver, manufacturers of turret lathes, state that business is very satisfactory and that it has shown good improvement during the past two months. Foreign business, particularly with England, is on the increase. They notice increasing demand for larger sizes of tools and more than ever before there is a demand for direct connected tools.

The Platt Iron Works Company, Dayton, is making improvements and has been buying a number of tools of Cleveland dealers.

The Erie Railroad has been making inquiries for some new machinery for the new machine shop which it is erecting in this city.

The Lake Shore & Michigan Southern Railroad has been adding a number of large lathes and other tools at its Collinwood shops, orders being placed through Cleveland dealers.

The Board of Public Service of Lorain, Ohio, will open bids October 9 for the construction and equipment of a filter plant of 6,000,000 gallons daily capacity. The city engineer has the plans.

The Walker Mining & Mfg. Company has been formed by F. Y. Levans of Cleveland and J. B. Weigel of Canton, Ohio, and others. The company proposes to erect a large plant at Pierce, Ohio, for the manufacture of brick and clay insulators for electrical work. Structural work and power equipment will be purchased for the plant.

The Marion Steam Shovel Company of Marion, Ohio, is preparing to erect additions to its boiler shop and carpenter shop buildings.

The Elyria Engine Company, Elyria, Ohio, is erecting a large foundry where it will produce its own castings. The company is building larger gas engines than heretofore, and is meeting with good demand for engines of 100 horse-power and over.

The Niles Boiler Company, Niles, Ohio, has increased its capital stock to \$150,000, and it is preparing to enlarge its plant and improve its facilities. J. S. Pell, formerly prominently identified with the plant of the Stirling Boiler Company, at Barberton, Ohio, has become superintendent of the Niles Company, succeeding E. A. Gilbert.

The Shaw-Kendall Engineering Company, Toledo, which makes a specialty of auxiliary steam equipment and piping for power plants, has purchased a building site on Huron street, that city, where it will erect a large factory building. Plans are being prepared and it is the intention to have the building ready for occupancy shortly after the first of the year.

The Joseph McCreery Company, Toledo, has been awarded contracts by the Navy Department for supplying ventilating apparatus for the battle ships California and South Dakota and the cruiser Milwaukee, now building at the Union Iron Works, San Francisco; also for the battle ship Vermont, under construction at the plant of the Fore River Shipbuilding Company, Quincy, Mass. The company is improving its facilities for this work.

The Citizens' Gas & Electric Company, Findlay, Ohio, is arranging to install new steam and electrical equipment in its power plant.

The Coen Vessel Company, Atlantic City, N. J., is looking for a site near Akron, Ohio, for the erection of a factory for the manufacture of steel canal boats. The company announces that it has secured contracts for a number of such boats for Cleveland parties who expect to operate them on the Ohio canals, which are being improved. The boats will be 85 feet long, 14 feet beam and will have a capacity of 100 tons. They will be propelled by turbine engines. Canal boats of this type are in successful operation on the Miami and Erie canals.

The Ohio Machinery & Equipment Company has opened offices at 821 Rockefeller Building. It handles steam and electrical equipment and machine tools of all kinds and has a large warehouse.

## New England Machinery Market.

WORCESTER, MASS., October 3, 1905.

The only change noticeable in the market is the ever increasing difficulty in procuring early deliveries. Occasionally machine tools may be procured from stock, but usually in such instances they are more or less special tools. The standard lines most commonly used are seldom to be had under 60 days, and much longer time is not infrequently quoted. Where machines are required with special mechanisms or of special general design delivery is usually months ahead. In one instance June, 1906, was the agreed time.

Certain machine tool men are congratulating themselves that they were stiff on their prices in the spring and early summer, before the actual increase in demand was felt in its fullness. Considerable business was taken then at low prices. Shops were filled, which owners regretted before July was ended. Those who sacrificed this early business by maintaining prices were able to enter the market at a later day with greater profit, probably much more than making up for the earlier loss of business, and the gain has been great for those who took the opportunity and stocked up with finished machines when labor and materials were lower.

The small shops are now very busy and so are the manufacturers of special machinery for all sorts of general purposes.

The Universal Machine Screw Company, Hartford, Conn., which will manufacture a multiple spindle screw machine, has taken the shop building recently occupied by A. Clement, Paris, France, as his American automobile works, and is equipping a modern machine shop. This is a new corporation, organized in Connecticut with \$100,000 capital stock. The officers are: President, Charles Phelps, Rockville, Conn.; vice-president, R. Hakewessell, Hartford; secretary and treasurer, Frederick A. Betts, Hartford; mechanical engineer, C. M. Spencer, Hartford. Mr. Hakewessell and Mr. Spencer will have the active management of the business. Both are experienced designers of screw machines. Mr. Hakewessell invented the machine built and operated by the Acme Screw Machine Company, Hartford, which was sold out to what is now the Cleveland Acme Company. Mr. Spencer is the inventor of the Spencer rifle, the Spencer repeating shotgun, of the screw machine under the patents of which the Hartford Machine Screw Company was organized and that under which the Spencer Automatic Machine Screw Company was established and carried on its business. The multiple spindle automatic machine which the Universal Machine Screw Company will put on the market is stated to have a daily capacity of 1800 set screws  $\frac{1}{2}$  x  $1\frac{1}{2}$  inches. It is a five spindle machine.

The Wire Fabric Company, Wollaston, Mass., is in the market for coating machines and mixers for use in the manufacture of a translucent wire fabric which is intended to take the place of glass for such purposes as skylights, stationary awnings, light shafts, doors, covered passages and other places where the element of breakage comes into consideration. The material is especially designed for skylights of large area. Water proof paper, rubber and cement will also be manufactured. It is a new corporation organized under Massachusetts laws.

The Electric Vehicle Company, Hartford, Conn., is building a one-story addition 80 x 250 feet to be used as an assembling room, blacksmith shop and repair shop. Another new building is contemplated for assembling and for a testing department. The company proposes to build several new types of automobiles for next season.

The Sanford Mills, Medway, Mass., is to build a new

power house and will install a 100 horse-power steam engine, two boilers of 100 horse-power each and a 75 horse-power water wheel.

Frank W. Ruggles, formerly with the Knox Automobile Company, Springfield, Mass., has rented the buildings formerly occupied by the Ware Electric Light Company, Ware, Mass., and will equip the plant for the manufacture of gasoline engines and automobiles. A complete machine shop and foundry and trimming department will be equipped. It is proposed to organize a stock company for the conduct of the business.

The Water Commissioners of West Springfield, Mass., have decided to erect a pumping station in Bear Hole Valley. Two pumps of 1,000,000 gallons a day capacity each, operated by gasoline engines, will be purchased.

## Government Purchases.

WASHINGTON, D. C., October 3, 1905.

The Isthmian Canal Commission will receive bids until October 16 for steam pumps, boilers, &c.

The Isthmian Canal Commission will soon ask for bids for a quantity of supplies, including four 20 horse-power upright tubular submerged head boilers.

The Bureau of Supplies and Accounts, Navy Department, Washington, will receive bids until October 17 for the following supplies for the Portsmouth, Boston, Newport, New York, League Island, Annapolis, Washington and Norfolk navy yards: Schedule 156, lathes, milling machines, drills, &c.

The following bids were opened September 26 for supplies for the New York and Washington navy yards:

- Bidder 6. Biggs Heating Company, Washington, D. C.  
 22. Crocker-Wheeler Company, Ampere, N. J.  
 36. General Electric Company, Schenectady, N. Y.  
 39. A. D. Granger Company, New York.  
 49. Heine Safety Boiler Company, St. Louis, Mo.  
 54. E. Keeler Company, Williamsport, Pa.  
 72. National Water Tube Boiler Company, New Brunswick, N. J.  
 83. Royce & Ricketts, Washington, D. C.  
 88. B. F. Sturtevant Company, Hyde Park, Mass.  
 92. Sprague Electric Company, New York.  
 99. Vermilye & Power, New York.  
 107. Babcock & Wilcox Company, Philadelphia, Pa.

### Schedule No. 125.

Class 11. Two ventilating fans—Bidder 22, \$177; 36, \$320 and \$252; 83, \$200; 88, \$264; 92, \$154.

### Schedule No. 131.

Class 81. For furnishing and installing three water tube boilers at the Naval Hospital, Washington, D. C.—Bidder 6, \$6128 and \$6328; 39, \$6732; 49, \$5921 and \$5721; 54, \$5496; 72, \$5277; 99, \$6216; 107, \$7506.

Class 82. For furnishing and installing coal hoisting and conveying apparatus at the Naval Hospital, Washington, D. C.—Bidder 6, \$1600.

Bids were opened on September 25 at the Ordnance Office, War Department, for supplying the United States Army with two 12-inch disappearing gun carriages, model of 1901, as follows:

Bethlehem Steel Company, South Bethlehem, Pa., \$49,780 per carriage; delivery of first carriage within 12 months and second within 15 months from date of contract.

Morgan Engineering Company, Alliance, Ohio, for the two carriages, \$124,875; delivery of first carriage in 9 months and second within 12 months from date of contract, f.o.b. Alliance, Ohio.

Alliance Machine Company, Alliance, Ohio, \$53,725 per carriage; delivery of first carriage within 16 months and second within 20 months from date of contract.

Bids were opened by Major G. S. Bingham, depot quartermaster, New York, September 25, for furnishing one 40 horse-power boiler, as follows:

Motley, Green & Co., New York, \$800.

Vermilye & Power, New York, \$770.

Under bids opened September 12 for machine tools for the various navy yards the Sherman-Brown-Clements Company, New York, was awarded class 56, two portable electric drills, \$94.75.

The following awards have been made for supplies for the various navy yards, bids for which were opened September 19:

Burke Electric Company, Erie, Pa., class 31, five motors, \$903.25; class 32, two motors, \$350.80.

Independent Pneumatic Tool Company, Chicago, Ill., class 42, two pneumatic breast drills, \$101.50.

Rand Drill Company, New York, class 43, six pneumatic hammers, \$312.

Stirling Company, New York, class 71, two 100 horse-power water tube boilers, \$4450.

Lumley-Dobson Company, Norfolk, Va., class 112, one improved foot power squaring shears, \$90; class 113, one improved foot power cornice brake, \$185.

Mitts & Merrill, Saginaw, Mich., class 114, one key seating machine, \$1254.

Rahn-Mayer-Carpenter Company, Cincinnati, Ohio, class 115, one engine lathe, \$545.

Handlan-Buck Mfg. Company, St. Louis, Mo., class 116, three portable electric bench grinders, \$180.

Chicago Pneumatic Tool Company, New York, class 142, two pipe bending machines, \$270.

Under bids opened August 29 for supplies for the various navy yards Manning, Maxwell & Moore, New York, were awarded class 4, one geared trimming press, motor driven, \$1240; class 6, one automatic railway cut off saw, \$731.

Berger-Carter Company, San Francisco, Cal., class 1, six portable oil rivet forges, \$570.

Edward J. Elting, Philadelphia, Pa., class 2, one magnetic separator, \$250.

Henshaw, Bulkley & Co., San Francisco, Cal., class 3, one 2500-pound double frame steam drop hammer, \$2778.

Class 5, one tube cutting off saw, will be purchased in open market.

J. G. White & Co., New York, have been awarded contract for the construction of the coaling plant at Olongapo, P. I., at their bid of \$499,500. Bids were opened August 26.

R. G. Packard & Co., New York, have been awarded the contract for the auxiliary hoist for the 100-ton crane at the New York Navy Yard at their bid of \$15,519.

## The Cincinnati Metal Trades Association.

CINCINNATI, OHIO, October 2, 1905.—The regular quarterly meeting of the Cincinnati Metal Trades Association was held at the Grand Hotel on Thursday evening, September 28. P. G. March of the Cincinnati Shaper Company presided. This was an executive session purely, and some discussion was held on topics not reported.

A report from the Committee on New Constitution in harmony with the National Metal Trades Association was submitted and adopted. William Lodge spoke on the premium plan under two headings—namely, first, it increases the output, and, second, it increases the wages and earning capacity of employees. J. H. Day suggested the advisability of raising the standard of apprentices by requiring them to have a wider education. Secretary J. H. Manley spoke on the advantages of the association and referred to the increase in interest shown by its members. Addresses were also made by W. P. Eagan and Robert Wuest of the National Metal Trades Association, J. B. Doan, Fred. A. Geier and Harry Hoeflinghoff. The following members were present:

- P. G. March, Cincinnati Shaper Company.  
 E. S. Hargrave, Cincinnati Tool Company.  
 Wm. Lodge, Lodge & Shipley Machine Tool Company.  
 J. E. Hirst, J. A. Fay & Egan Company.  
 J. W. Nell, J. H. McGowan Company.  
 D. C. Jonas, Lunkenheimer Company.  
 H. Ritter, Lunkenheimer Company.  
 B. Sebastian, Sebastian Lathe Company.  
 J. May, Sebastian Lathe Company.  
 T. L. Greenwald, I. & E. Greenwald Company.  
 C. E. Greenwald, I. & E. Greenwald Company.  
 H. M. Lane, Lane & Bodley Company.  
 W. Laidlaw, Laidlaw-Dunn-Gordon Company.  
 A. H. Teuchter, Cincinnati Machine Tool Company.  
 F. A. Geier, Cincinnati Milling Machine Company.  
 S. C. Schauer, Cincinnati Machine Tool Company.  
 J. LeBlond, R. K. LeBlond Machine Tool Company.  
 E. Von Wyck, Von Wyck Machine Tool Company.  
 O. J. Schafer, Globe Pattern Works.  
 O. Mueller, Miller Machine Tool Company.  
 L. C. Twachtman, Fostick Machine Tool Company.  
 J. H. Day, J. H. Day Company.  
 Harry Dolle, National Machine Tool Company.  
 C. Naber, National Machine Tool Company.  
 J. B. Doan, American Tool Works Company.  
 B. B. Quilen, Cincinnati Planer Company.  
 H. Hoeflinghoff, Bickford Drill & Tool Company.  
 H. Biehler, Bickford Drill & Tool Company.  
 Al. Robinson, American Tool Works Company.  
 N. B. Chace, Cincinnati Shaper Company.  
 H. G. Dreses, Dreses Machine Tool Company.  
 M. R. Conway, Conway & Co.  
 R. K. LeBlond, R. K. LeBlond Machine Tool Company.  
 Wm. Greaves, Greaves-Klusman & Co.  
 O. H. Broxterman, John Steptoe Shaper Company.

The United States Steel Corporation has placed an order with the American Ship Building Company for two ore boats which will be the largest on the lakes. They will be 600 feet long and will have a capacity to carry a little over 12,000 tons of ore. The corporation has secured an option on two more boats of the same size.



### The American Steel Foundries.

At the annual meeting of the American Steel Foundries, held in Jersey City, October 3, Chairman E. H. Gary read a preliminary report, as follows:

"The company has lost by operations during the year ending July 31 \$329,000. It has, however, expended for improvements and betterments \$317,000. These improvements and betterments were of such a character that they will probably be capitalized, in which case the actual loss will be about \$12,000."

It was further stated that about February 1 the company took over the Simplex Railway Supply Company. This company earned for the 13 months ending July 31 \$356,000. These earnings are not included in the statement of the American Steel Foundries, but will ultimately be carried to its credit.

The Commonwealth Company, also owned by the Steel Foundries, reports earnings for the ten months ending July 31 of \$20,000. These earnings likewise are not included in the Steel Foundries report.

Chairman Gary stated that the outlook for the company, as compared with the past, is extremely good. Business has improved, prices are higher, expenses less and profits larger than heretofore. There was every reason, he said, to believe that the company's earnings would be very much larger for the current year. In addition, the earnings of the Simplex Railway Supply Company are increasing very largely, that company now earning upward of \$50,000 per month, and its business is increasing.

The stockholders voted to amend the charter by reducing the Board of Directors from 21 to 15. The by-laws were also amended by abolishing the Executive Committee and directing meetings of the Board of Directors once a month instead of once every three months, as heretofore. A formal resolution was also adopted confirming all the acts for the past year of the Executive Committee and directors.

The following were elected directors for three years: George B. Leighton, Max Pam, Edward Shearson, J. A. Middleton and John H. Harrison.

Mr. Gary announced that the recent bond issue had all been disposed of, nearly half the amount of bonds being taken by stockholders. He further announced that it had been decided to move the general offices of the company from New York to Chicago, as there were various reasons in favor of this change, most of the company's properties being in the West.

### New York Pig Iron Warrant Market.

Pig Iron warrants, as well as Pig Iron warrant certificates, were offered for sale in the Produce Exchange on Wednesday as an innovation, and that added feature will be continued. The following prices for warrants were established on call Wednesday noon: Birmingham, No. 2, \$13; Gray Forge, \$11.50; Pennsylvania, No. 2, tidewater, \$17.50; Valley Warrant Bessemer, \$15. The sales during the week were light, amounting to but 1100 tons, and the transactions were as follows: 100 tons, October regular, \$15.75; 200 tons, October Foundry, \$16; 100 tons, January Foundry, \$16; 500 tons, January regular, \$16; 100 tons, November regular, \$15.90; 100 tons, November regular, \$15.90. The following prices were established on call Wednesday noon:

	Regular.		Foundry.	
	Bid.	Asked.	Bid.	Asked.
Cash	\$15.75			
October	15.70		\$15.25	\$15.75
November	15.80		15.25	15.80
December	15.85		15.25	15.80
January			15.25	15.80
February				16.00
March				

Reports are in circulation in the Westphalian iron market, Germany, of the purchase of a large tonnage of structural steel for export to the United States, but no details are given.

The general sales department of the National Steel & Wire Company, which was formerly located with the other offices of the company at 114 Liberty street, New York, has been moved to New Haven, Conn.

### OBITUARY.

WILLIAM B. RANKINE.

William B. Rankine, second vice-president of the Niagara Falls Power Company, died in Franconia, N. H., September 30, after a short illness, in his forty-eighth year. He went to Franconia on August 12 on a vacation. No man was better known in the field of Niagara power development than Mr. Rankine. It was mainly through his efforts that capital was enlisted in the present project of the Niagara Falls Power Company as well as the Canadian Niagara Power Company. For nearly 20 years his entire effort had been devoted to this development. He was born in Oswego, N. Y., January 4, 1858, and obtained his education in Hobart and Union colleges. He was admitted to the bar in 1880, and after a short time passed in Niagara Falls he began practice in New York City. It was while he was a resident of New York that several Niagara Falls gentlemen conceived the ambition to begin the development of Niagara power on a large scale. They sought out Mr. Rankine in New York, soliciting his aid in getting capital to back the project. Negotiations extended over several years, but by 1890 the company was fully capitalized and the work begun. Since that time Mr. Rankine had devoted his time to the interests of the power development. At the time of his death he was also a director of the Ramapo Iron Works, vice-president of the Canadian Niagara Power Company, second vice-president of the Niagara Junction Railway, second vice-president of the Niagara Development Company, vice-president of the Francis Hook & Eye & Fastener Company, secretary-treasurer of the Cataract Power & Conduit Company, director and chairman of the Executive Committee of the Natural Food Company, director of the Tonawanda Power Company, secretary of the Tesla Company, director of the Bell Telephone Company, director of the Niagara Tachometer & Instrument Company, director of the Niagara Research Laboratories, a trustee of the Equitable Trust Company, a trustee of De Veaux College, Niagara Falls; a life trustee of Union College and a member of a number of clubs. His death is considered a very great loss to the industrial interests of western New York and the Province of Ontario. Having successfully guided the development of a vast amount of the power of Niagara his efforts were being directed to its application and use, with what great success the numerous industries on the lands of the Niagara Falls Power Company indicate clearly. He is survived by a widow.

#### NOTES.

THOMAS BEST, for many years connected with tube manufacture and construction of tube works in the Pittsburgh district, died September 23, aged 59 years. He was first employed in the Crescent Tube Works, Pittsburgh, afterward known as the Pennsylvania Tube Works. Later he went to Cleveland, Ohio, and was employed as foreman in the rolling mills there. Returning to the Pittsburgh district he became foreman in the McKeesport plant of the National Tube Company. On the formation of the Monongahela Tube Company he took charge of its construction work and afterward of the operation of the mill.

CAPT. HENRY MERRY, one of the early vesselmen of the great lakes and prominently identified with iron mining operations in the early days of the Marquette range, died at Cleveland, Ohio, September 24. He was born in Oxfordshire, England, in 1830, and went to Cleveland, Ohio, in 1851. In the later '50's he built iron ore docks at Marquette, Mich., and for 33 years was superintendent of the Jackson mine, at Negaunee, Mich. Some years ago Captain Merry went to Virginia and was connected with the Lowmoor Iron Company, having charge of its iron mining operations. In the last few years he has lived in Cleveland.

THOMAS MAHER, a pioneer Cleveland, Ohio, foundryman, died September 24, aged 74 years. He learned the molder's trade in a Cleveland foundry in the early '50's and soon after formed a partnership with N. P. Bowler, under the name of Bowler & Maher. The firm later be-



came Bowler, Maher & Brayton, and it was first to manufacture car wheels in Cleveland. In 1880, Messrs. Maher and Brayton withdrew from the firm and started another foundry under the name of Maher & Brayton. Mr. Maher bought out his partner nine years ago, and organized the Maher Wheel & Foundry Company, now a part of the National Car Wheel Company. For several years past Mr. Maher had been vice-president of the Riverside Foundry Company, Cleveland. He is survived by his widow and six children, among the latter being Charles A. Maher, secretary of the National Car Wheel Company.

LUTHER ALLEN, for many years prominent in financial and manufacturing companies in Cleveland, Ohio, died September 23, aged 59 years. In 1886 Mr. Allen became secretary and treasurer of the Globe Iron Works Company, now a part of the American Shipbuilding Company. He was a member of the Executive Committee of the latter corporation.

MAURICE HECKSCHER, late vice-president and treasurer of the Richard Heckscher & Sons Company, Philadelphia, owning and operating the Swede Furnaces at Swedeland, Pa., died at his home, at Bryn Mawr, Pa., on September 29, after a lingering illness. Mr. Heckscher graduated with honors from Harvard University in the class of 1887, since which time he has been actively engaged in business in Philadelphia and was well known in the iron and steel circles of Pennsylvania. His widow and two daughters survive him.

CHARLES V. LORD, Bangor, Maine, president of the Union Iron Works and the Bodwell Water Power Company, died recently, aged 79 years. He was prominent in the business and political life of his city, being president of the Vease National Bank and the Bangor Savings Bank, and was a former representative in the Maine House of Representatives.

JOHN FLEMING DRAVO died at Beaver, Pa., September 30, aged 85 years. He had been a member of the Pennsylvania Legislature and surveyor and revenue collector for years in Pittsburgh. He was third president of the Pittsburgh Chamber of Commerce. For a long period he was identified with the coal and coke interests of Pittsburgh and at various times was president of the Coal Exchange. His active interest in the improvement of the waterways led to his being called "Dean of the Waterways."

**The British Iron Market.**—British iron trade reports of September 20 indicated that prices in the pig iron market had been well maintained, with the exception of some fluctuations in warrants. Advices from the United States of extremely strong conditions in all departments of the market contributed to the better feeling. One unfavorable feature was the continued increase of Cleveland pig iron stocks in the Connal stores. The total on September 20 was 592,886 tons, an increase in September up to that time of 21,205 tons. Exports of pig iron from the Cleveland district to Germany have been falling off considerably in view of the heavy increase in the German production of pig iron. A Glasgow cablegram of October 3 notes that Cleveland pig iron warrants were strong, advancing to 52s. 6d. cash, and 52s. 10½d future delivery. A large business was done. Prices closed at sellers 52s. 1d. cash and 52s. 6d. future delivery. The British rail trade is reported in good condition, and manufacturers are looking for good orders from Canada. Inquiries for 50,000 tons of steel rails for export were received recently, including 30,000 tons for spring delivery for the Grand Trunk extensions, and 20,000 tons for a South American railroad. Scotch rail mills are so well filled with orders that they could not bid on this business.

We are officially advised that the report is untrue that the Bessemer Coke Company, Pittsburgh, Pa., has sold its entire output of coke for the next five years to the United States Steel Corporation. The Bessemer Coke Company has started work on the building of about 300 ovens at its Martin Works in the Connellsville region. When these have been finished this company will be the

second largest independent maker of coke in the Connellsville region. Last spring it bought a large acreage of coal lands in West Virginia and work on improving the tract has been started, 30 coke ovens having been built, and plans are being made for the building of additional ovens.

### German Iron Trade Combinations.

The German Steel Syndicate, having been unable to carry out the plan for the formation of a syndicate in bars, parties outside of the syndicate have taken up the matter more recently. A favorable response has been given by members of the syndicate representing about 1,000,000 tons a year, or two-thirds of the steel bar output controlled by the syndicate. The proposal is to formulate an agreement as to prices and to establish a sales bureau at Essen. The fact that the Hoesch Steel Works and De Wendel & Co. and also most of the open hearth steel producers will not co-operate in the movement makes its success somewhat doubtful, but the recent favorable turn in business may facilitate the efforts of the syndicate promoters. Another combination movement on foot in Germany is that for a syndicate to include all the wire nail producers. Eleven important works formed a wire nail association and have recently brought in four other firms, but six works have declined to become members. Some of the works which have improved their plants and now have large outputs have asked for higher allotments than were given them under the old syndicate arrangement. Certain firms solicited want to impose the condition that the syndicate shall lapse in case a drawn wire syndicate is not formed by April, 1906.

**A Clairton Steel Works Record.**—All previous records for output of open hearth steel at the Clairton plant of the Carnegie Steel Company were broken in September, 42,700 gross tons of steel ingots having been turned out. In August 40,200 tons of ingots were turned out, which was the record output up to that month. The plant was run three days more in August than in September. Twice during September the furnaces broke their record of 36 heats for 24 hours. On September 29 were made 40 heats, establishing a new 24-hour record. The 18-inch mill at this plant for rolling bars and rounds has been started up and the new 23-inch mill now being built will be ready for operation early in November. This mill will roll intermediate sizes of structural steel.

The proposal has been made to close the bituminous coal mines of the West and Central West on April 1, 1906, with a view to reducing the output and making possible a more profitable price. President Francis L. Robins of the Pittsburgh Coal Company says there is an overproduction of bituminous coal and that to overcome it some mines will have to go out of business or all the mines must shut down together. Consumers, he adds, have been getting their coal too cheap and would not object to paying 10 cents a ton more provided the advance is uniform. A meeting of the operators of hard and soft coal mines has been called for November 22 in Chicago.

The steamer William G. Mather, named for the president of the Cleveland-Cliffs Iron Company, Cleveland, Ohio, was launched on September 23 at the Ecorse yard of the Great Lakes Engineering Works below Detroit. The new vessel is 511 feet long, 31 feet deep and 60 feet beam, being the widest propeller on the lakes. The two 600-foot boats recently ordered by the Pittsburgh Steamship Company are 58 feet beam.

All departments of the works of the Mexican National Iron & Steel Company, at the foot of Iron Mountain, near Durango, Mexico, were closed September 9. As the works have been running steadily for several years the sudden stoppage has caused a revival of the rumors in circulation several times in previous years that the plant has been sold to a syndicate of United States capitalists.

## Trade Publications.

**Steam Meters.**—Sargent Steam Meter Company, First National Bank Building, Chicago, Ill. Pamphlet. Contains an illustrated description of the Sargent steam meter, with particular reference to its points of usefulness, principle of operation and the calibrating of the meter. A description of the Sargent meter was printed in *The Iron Age* July 20, 1905.

**Boilers and Engines.**—Howard W. Reed, Third and Arch streets, Philadelphia, Pa. Catalogue. Size, 6 x 8½ inches; pages, 58. Devoted to a description and specification of a line of engines and boilers which are carried in stock for immediate shipment. Special reference is made to the class B high speed automatic engines. The illustrations show stationary side crank engines, center crank engines, portable engines with boilers and vertical engines. A table of specifications and brief description accompanies each illustration. The latter part of the book treats in a similar way tubular steam boilers, portable boilers, upright boilers, return tubular portable boilers and boiler fronts for stationary boilers.

**Crushing Machinery.**—Sturtevant Mill Company, Boston, Mass. Two pamphlets. The first refers to Sturtevant crushing machinery, dealing briefly with steel rock crushers for coarse work, roll jaw crushers, centrifugal crushing rolls, balanced wide faced rolls and toggle screen. Second is devoted entirely to centrifugal rolls, in which the crushing shocks are quartered, balanced and cushioned.

**Gear List and Tables.**—Gleason Works, Rochester, N. Y. An indexed compilation of tables of gears with their pattern numbers, by which they may be ordered. The tables give the number of teeth, weight and price for spur gears, spur core wheels, miter gears, miter core wheels, bevel gears, bevel core wheels and hobs. A number of tables of useful information are appended, these dealing with strength of gears, standard dimensions in terms of diametral and circular pitch, bevel gear diameter increments, diameter and angle rules for bevel gears and diameter rules for spur gears and other instructions for assisting in the designing of gears.

**Magnetic Accelerators and Couplings.**—Cutler-Hammer Clutch Company, Milwaukee, Wis. Book 1. Contains a complete description of a magnetic clutch designated as an accelerator, designed to take the place of mechanical or friction clutches in the transmitting of power through shafting. A similar description is given of magnetic couplings. These differ from the accelerators in that they are not adapted to starting a load from rest and bringing it up to synchronism with the driving shaft, but are designed for use only where both shafts are stationary or running at approximately the same speed when the coupling is energized. Tables of sizes are given.

**Marine Engines.**—Pennsylvania Iron Works Company, Philadelphia, Pa. Catalogue. Size, 6 x 9 inches; pages, 48. Contains description of the Globe marine engine, which is a four-cycle gasoline engine made in sizes up to 200 horse-power. A full explanation of the parts is given and similar treatment is devoted to self starting engines. This is followed by illustrations of the engines in their various sizes and forms, with dimension tables. The remainder of the book contains views of launches fitted with Globe engines, which are divided into classifications of pleasure boats, auxiliary yachts, Government, State and municipal service boats, and working boats.

**Drop Presses.**—Waterbury Farrel Foundry & Machine Company, Waterbury, Conn. Catalogue, section D. Size, 6 x 9 inches; pages, 35. Contains illustrations and data concerning belt operated drop presses and automatic board lift drop hammers for forge and stamping operations. The first include portable drop presses for bench and all classes of small work and poppet drop presses of heavier design for pressures from 150 to 1200 pounds. Drop hammers are made in sizes from 200 to 2000 pounds weight of hammer.

**Gas Producers.**—Wile Power Gas Company, Rochester, N. Y. Catalogue. Concerned with producer gas fuel installations. The advantages and economies of producer gas made from small coal used for fuel, instead of high priced coal, coke, illuminating gas or oil, with Wile producers, is given as 25 to 30 cents per 1000 cubic feet. An inclosed list gives a few of the many applications of producer gas.

**Milling Machines.**—Hendey Machine Company, Torrington, Conn. Catalogue, 6 x 9 inches; pages, 64. Illustrates a line of Hendey-Norton milling machines, both plain and universal types, in regular and special patterns, and also shows a few attachments and tools which are furnished with milling machine equipments. Construction is described in detail. Detailed illustrations and descriptions are given of special parts, including vertical spindle attachment, high speed attachment, rack cutting attachment, universal index centers, head stock, positive change feed, &c.

**Electric Generators.**—Crocker-Wheeler Company, Amper, N. J. Bulletins 56 and 57. Both are supplements to bulletin 55 and show two direct connected generating sets. The first shows a generator in combination with a Case engine built by the New Britain Machine Company, New Britain, Conn., and the second with a Forbes engine, built by the W. D. Forbes Company, Hoboken, N. J.

**Steam Traps.**—Youngstown Steamtrap Company, Keystone Bank Building, Pittsburgh, Pa. Catalogue. Devoted to a new steam trap, which it shows with numerous illustrations, sections and explanation of the principle of action. The special points of merit claimed are durability and simplicity. The trap uses no floats, levers, pins, valves or buckets, and is stated to require practically no attention after being once set up.

**Electrical Apparatus.**—General Electric Company, Schenectady, N. Y. Bulletins, flyers, &c. Bulletin 4414 concerns electrical driven house pumps; bulletin 4415, the Thomson recording wattmeter, Type C; bulletin 4416, service cut outs. Flyer 2154 pertains to 15-ampere 125-volt double pole knife switch; 2155, to Type SF speed controlling rheostats for use with variable speed shunt or compound wound motors; 2156, to ceiling rosette with inclosed fuse; 2157, to combined switch and inclosed fuse cut out for car lighting; 2158, to combination service switch and cut out in iron box; 2159, to inclosed fuse cut outs; 2160, to Edison socket rings; 2161, to porcelain ceiling boards, and 2162, to pendant switches. Supply catalogue 7589 gives prices of repair parts of form 3 and form 2 are lamp hangers and cut outs. Price-list 5138 applies to Type H oil transformers; 5139, to Type HB oil transformers. Publication 3355 deals with coffee making by electricity. These publications are accompanied by indexes to bulletins, flyers, supply catalogues, descriptive catalogues and price-lists.

**Refrigerating Machinery.**—De La Vergne Machine Company, East 138th street, New York. Folders. One concerns horizontal refrigerating machines, steam, motor and belt driven, made in capacities of from 5 to 500 tons. The other is concerned with ammonia fittings and condensers.

**Roof Construction.**—D. F. Nisbet, contracting engineer, 409 Lewis Building, Pittsburgh, Pa. Pamphlet. Size, 6 x 9 inches. Subject, "Alken's Improved Roof Construction for Manufacturing Buildings." Gives illustrations of buildings erected on this system, designed by Henry Alken, engineer, Pittsburgh, Pa.

**Telephone Switchboards.**—Kellogg Switchboard & Supply Company, Chicago, Ill. Catalogue. Size, 6½ x 9 inches; pages, 111. Gives a very complete account of the common battery nonmultiple switchboards without central office connections, and wiring diagrams, illustrations of apparatus, switchboards, power equipment and switchboard protectors.

**Gas Engine Igniters.**—Holtzer-Cabot Electric Company, Boston (Brookline), Mass. Bulletin 309. Concerned with gas engine igniters of magneto types for use with wipe or touch spark systems. An accompanying circular deals with the Holtzer-Cabot factories and a few of their products, being a souvenir edition prepared for the International Electrical Exhibition held at Boston last July.

**Dynamos and Motors.**—Northern Electrical Mfg. Company, Madison, Wis. Bulletin No. 50. Subject, "Northern Spherical Machines," including dynamos and motors (superseding spherical machine sections of bulletins 30 and 35). Illustrations show standard machines and modifications of frames, supplied in back-gear, vertical and universal motors. Shows the application of these machines in industrial plant service and machine shop work, &c., and contains considerable helpful information.

**Steam Specialties.**—Hills-McCanna Company, 128 East Kinzie street, Chicago, Ill. Circular. Illustrates force feed lubricating pumps, high pressure gauge cocks, low water alarms and sight feed, O'Connell swing joints and connections for oil or grease, and graphite agitator.

M. J. Covell, foundry foreman of the Union Iron Works, Los Angeles, Cal., has recently been granted a patent on a foundry core machine feeder and cleaner. The device was particularly designed for the Hammer core machine, although the principle can be successfully used in any core machine having a round hopper. The invention consists of a triangular shaped metallic frame fitting in the cone shaped hopper and revolving in a way that insures the stirring of the core sand and the scraping of the sides. It obviates hard spots caused by clogging and expedites the operation of the machine. Less power is required and less lubricant.

In the twenty-ninth annual report of the Indiana Department of Geology it is stated as an indication of the failing of natural gas that small wells that would have been regarded as worthless and would have been plugged a few years ago are now watched zealously and drilling for them is encouraged. Most of the wells now have an output of less than 500,000 cubic feet daily. In the halcyon days a well that produced less than 5,000,000 cubic feet a day was regarded as of little importance. The gas now produced is all sold at meter rates, resulting in an income relatively five times as great as under the old flat rate system.



# HARDWARE

**I**N these days of changing methods and startling innovations of one kind or another a theory which the jobbing trade are fond of propounding is being sadly discredited and demolished. According to this theory, which has the charm of simplicity, it is the province of the manufacturers to make goods and sell them to the jobbers, who, as the distributors, sell them to the retailers, whose privilege it is to furnish them to the consumers. This theory is unfortunately too restrictive for an age of enterprise and competition. The manufacturer by this theory is bound to sell his product exclusively to jobbers and refrain from dealing with the retail merchants or the consumers, no matter how large the transaction may be or how urgent the necessity for breaking away from the trammels of the theory. Similarly, if the jobber should do anything but job, as, for example, if he should manufacture anything to sell or if he should have a retail department or in any way supply factories or individuals otherwise than through the retail trade, it would be a violation of the theory. In like manner the retailer, if he should either make goods or job them on a small scale, would be showing disloyalty to the theory, which, fortunately for the spirit and progress of trade, has never been anything but a theory. The fact is that under the exigencies of business which make it imperative to adopt lines of action which make for success it becomes necessary for manufacturers, jobbers and retail merchants alike to enter upon what is, under this fanciful theory, the province of one or the other of the great classes in the trade.

This is obviously the case with the manufacturer. If the jobbers would take all of his product it would be feasible for him to dispose of his goods exclusively through this channel. How many are the instances, however, in which the jobbers will not touch his goods. Take the case of a new article, or new line—the jobbers will not, and indeed in frankness it must be said they cannot, make a market for it. Time after time the unsophisticated manufacturer, confident in the merit of his specialty, has taken it to the jobbers, even those with whom he has established relations on other goods, and he is courteously or curtly informed that when there is a demand for the article they will be pleased to handle it. Under these circumstances he endeavors to create a demand directly from the retail trade, and while he is desirous of being loyal to the jobber as the distributor he is compelled to become his own distributor. It is indeed not infrequent that he is obliged to disregard the theory still further because he finds the, to him, strange reluctance on the part of the retail merchants to sell his specialty, so that the only way to make a market for it, unless he is to wait through long years for an uncertain result, is to introduce the article he is manufacturing to the public, or to the special class for whom it is intended, by means of personal canvassers or miscellaneous advertising. He is fortunate if success is obtained on these lines, but he is able to pursue this course philosophically, knowing that if he had to depend upon the jobbers to find a market he would have to wait until doomsday.

There is on the part of the jobbers a similar infraction of the principle, according to which they are to be the distributors of the manufacturers' product and leave the serving of consumers to the retailers. For years this

theory has been contradicted by their practice, as they have openly or covertly sold goods to other than merchants, some of them, indeed, having retail departments organized for this purpose. One of the complaints of the retail trade in every part of the country is of the intrusion of the jobbers into their territory and the selling of goods to their customers. The operation of retail departments connected with jobbing houses is another form of the practice with which the trade are familiar. There has been, however, of late a significant breaking away from the limitations which the theory would lay upon jobbing enterprise, inasmuch as the jobbers are to a marked extent entering into the manufacturing field. This is done either openly as they directly own and operate factories which supply them with certain lines, or in a more covert manner as they secure for themselves the entire output of certain plants which they control and practically own. Just as far, too, as they market their own private brands they seem to forget their function as distributors of the manufacturers' products and aspire to appear as manufacturers themselves. This theory, which was especially devised for the benefit of the jobbers, has certainly received ruthless treatment at their hands.

It has not, however, fared much better with the retailers. Practically every retail merchant in the country buys from manufacturers as well as from jobbers, and multitudes of them who are advantageously situated are growing into jobbing houses themselves, thus following the example which has been set them by jobbers all over the country, nearly all of whom started out originally as retailers and little by little developed into the larger activities of the jobbing trade. Where an opportunity presents itself to retailers to engage in manufacturing, if they have the stuff that merchants are made of they do not hesitate to become producers, and the most zealous advocate of the theory under review, which both manufacturers and jobbers are justified in disregarding, would not venture to say them nay.

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## Condition of Trade.

There is apparently entire agreement among the trade that September business was of great volume, perhaps in excess of that of any previous year. The special reports which are given in this issue will be read with pleasure as reflecting very general activity and the prevalence of most satisfactory and promising conditions in practically every part of the country. The tone of the market is decidedly strong, and in several lines it is becoming increasingly difficult to place orders on as advantageous terms as a few weeks ago, while at the same time some definite advances are to be noted. The strength of the iron market, together with the great pressure upon the mills and furnaces, are features of the situation which have immediate effect on Hardware and manufactured products generally into which this material enters, as the influence of the higher prices for iron is being felt by manufacturers all along the line. Heavy goods are naturally responding to the impulse and rising gradually to a higher level of price. The effect upon trade generally is, however, not so much in the imme-



diate enhancement of values as in inducing a spirit of confidence in regard to business and stimulating industry and enterprise. The basis for the well being of the agricultural class is found in the magnificent crops which are rewarding the farmers' labors and will in the near future be putting into circulation great sums of money, which will enrich the channels through which it passes, thus contributing greatly to business activity. While there may be local influences which tend to repress enterprise and to make a cautious policy necessary, there is for merchants generally a summons to energy and enterprise in the prosecution of business in the expectation of a large volume of trade and of prosperous conditions, which should tend to reward their efforts with success.

### Chicago.

The month just closed is the largest September in the history of the Western Hardware trade. The volume of buying of seasonable goods has been tremendous, and retailers generally are experiencing no difficulty in disposing of stocks. Shipments by jobbing interests are going forward uninterruptedly, and filling in orders on Stoves, Coal Hods, &c., are getting more numerous, notwithstanding the warm weather. The large corn crop, estimated earlier in the season as the largest in the country's history, is sure to materialize on account of the spell of "corn weather," which has prevailed throughout the West during the past two weeks. The country generally is prosperous and the buying of all Hardware commodities promises to be heavy throughout the fall months. Shipments of Skates and Axes are already going forward in big volume from jobbers' stocks. Jobbing interests are already placing Refrigerator orders with the manufacturers and find the market decidedly firm. The advance of \$1 a ton affecting Wire Nails and all Wire products, announced on September 28, came as a surprise to the trade in view of the recent advance. The buying of Wire products generally during the month of September has broken all records and some of the manufacturers believe that consumers are not only covering fall requirements, but have been buying for their spring trade as well. The independent manufacturers have followed the lead of the leading interest and have marked up quotations likewise. Builders' Hardware, notwithstanding the fact that manufacturers continue behind on deliveries, continues to be sold at low prices. A few of the larger ones are maintaining a fair price for the product, but the majority of the manufacturers are cutting prices to secure business. An improved demand for both Black and Galvanized Sheets from stock is reported and better prices are prevailing. Considering the cost of raw material entering into the production of both Sheets and Wire products independent manufacturers not controlling their own supply of Steel, despite the strengthening of the market, can hardly realize a profit at prevailing prices.

### Baltimore.

CARLIN & FULTON.—The month of September has been one of great business activity in the city, and we are glad to say this has been the experience in all lines of goods. The energy of our trade organizations and salesmen has resulted in bringing to Baltimore a larger number of buyers than ever before, and it is a great pleasure to welcome to our doors those with whom we have business relations and whose visits can never be too frequent.

The agricultural sections have had generally good crops, with good prices, and are in excellent condition, while locally our manufacturing industries are all busy, labor being well employed and in many lines hard to obtain; in fact, the demand for labor in the city has drained the country to such an extent that farm hands are harder to obtain every year, and it is a serious question as to what the agricultural community will do for labor.

The immense contracts placed with the great steel corporations throughout the country have had their effect

in sustaining and stiffening the market, and we hear very rarely of a lower price on goods, but more frequently the reverse. We now hear the usual complaint as to the scarcity of cars and the congestion of freight, &c., which seems to be an annual occurrence and which probably is the result of an immense business and perhaps in a measure mismanagement in transportation.

### St. Louis.

NORVELL-SHAPLEIGH HARDWARE COMPANY.—We can report from this city that business in Hardware and other lines is excellent. Business this season is coming somewhat later than last year, but all indications now point to a very heavy trade up to the holidays. None can complain of the volume of sales. Whether jobbers are making the profit out of the business to which they are entitled is a matter of opinion.

With modern improvements such as stenography, type-writing, telephones, adding machines, pneumatic tubes, mimeographing and up to date systems of analyzing and obtaining accurate data of the results in the various departments and the proportion of one department's work to another a very large business can be conducted with much more ease, less worry and more comfort than would have been possible 25 years ago.

Everything in this world seems to have its compensations. In our younger days we did less business at a greater percentage of profit. In modern times it seems to be the order of the day to do a much larger business at a smaller percentage.

But no one familiar with the facts will deny that business to-day is done upon more intelligent and humane lines than 25 years ago. The writer can remember, as stock clerk, reporting for duty at 7.15 a.m. In the spring and fall months we did not consider it out of place to be called upon to work three and four nights a week until 11 o'clock. Houses paid practically no attention to sanitary conveniences for their employees. In the coldest weather there were no heating arrangements in many of the departments—the boys had to work hard to keep from freezing. Vacations were unknown, early closing was never taken into consideration in the fondest dreams of the clerks in those days.

Compare such conditions with what exist to-day—toilet rooms with modern plumbing, marble-top wash-stands, clean towels, good ventilation; shorter hours, very little night work, vacations, early closing on Saturdays. We wonder, however, if employees are any better satisfied to-day than they were in the old times.

As I write I have before me an invoice, written by hand, bought of Shapleigh, Day & Co., by Haley & McCause, Mount Vernon, Mo., dated April 6, 1858. This invoice has just been mailed to us by C. A. McCause, who continues his father's business. Accompanying the invoice was a long letter, written in a neat hand, commenting upon trade conditions. We are interested to note that the order in question was in the house just five days before it was filled. Evidently in those days orders were not shipped the day they were received. The letter concludes with the statement that trade generally is quiet, but a better state of feeling prevails.

In glancing over the invoice we find, in addition to regular lines of Hardware, Marbles, Sand Boxes (used in place of blotters) Powder Horns, Spirit Glasses, Spectacles, Spectacle Cases, Lead Pencils, Harmonicas, Knitting Pins, Jew's Harps, Violins, Violin Strings, Cow Hides, Ox Lashes and other goods, indicating that the jobber even in those days did not confine his attentions strictly to what we understand as "Hardware."

In looking over the prices we notice Drawing Knives, 9-inch, \$10 per dozen; Screw Hooks, \$2 per gross; Try Squares, \$5 per dozen; Carpet Tacks, 60 cents per dozen; Screw Hooks, 1-inch, No. 9, 35 cents per gross; Chisel Handles, 75 cents per dozen; Gun Caps, 45 cents per M; Meat Cutters, \$2 each; Wood Smooth Planes, 80 cents; Wood Jack Planes, 85 cents each. It is interesting to note, however, a number of other items on which prices do not vary 10 per cent. as compared with ruling prices on the same items to-day. What about the reduced cost by reason of modern machinery?

We were very much interested some time ago in an editorial in *The Iron Age* in regard to the increased consumption of Nails. In discussing this matter recently with a chance acquaintance on a train he asked me how many grown-up people I saw barefooted in these days in my travels. This thought had not occurred to me before, but I can remember 15 and 20 years ago when it was a very common sight, especially in country districts, to see both men and women coming to town without even the suggestion of shoes and stockings. How many of us can remember, as children, when we encased our feet in hard and uncomfortable shoes only on dress occasions?

This gentleman happens to be in the shoe business. He said two things had led to the whole civilized world being shod: First, a general improvement in the financial condition of the people, and, next, the great lowering in the price of shoes by reason of their being made by machinery.

It is surely an indication of advancing age when one commences to look back into the past and makes comparisons with the present, but it seems to me at times, when a somewhat pessimistic spirit may prevail, these comparisons are liable to lead to a keener appreciation of many of the good things and conditions for which we should be thankful.

### Philadelphia.

**SUPPLIEE HARDWARE COMPANY.**—During the past two months the conditions of trade in our city have been regularly reported to *The Iron Age* from our firm, but this time has elapsed since that responsibility has rested in the hands of the president of our company.

Appearances indicate that August may be looked upon as a record breaker for that month's business in trade circles all over the country, and at this writing it looks as if the month of September would not be far behind August. This opinion is formed from visiting various large cities in the extreme West. The month of September opened with every appearance of good crops harvested or in the process of harvesting, or in some instances only waiting for sufficient laborers to begin harvesting the big wheat, oat and corn crops. Added to this, our Southern neighbors are more than contented and satisfied with the cotton crop situation. Textile industries report a large demand for wool and that it is bringing exceptionally high prices, and since the writer's return the manufacturers that he has seen have reported marvelously good orders, as well as good trade prospects for the entire fall. The money market shows a considerably higher rate for money, with an increased demand to supply not only the requirements for agricultural products, but for commercial and mercantile business uses.

*Tempus fugit.* During the absence of the writer with his family he has been able to realize what can be seen of our country in the short space of two months, and with the kind permission of *The Iron Age* he will give his impressions of the prosperity of the country. Several thousand miles of cultivated country have been seen, and it is a grand and beautiful sight to see from the windows of the observation car thousands of acres, as far as the eye can reach, of wheat and oats, averaging from 40 to 50 bushels to the acre, harvested with steam machines and some with from four to six horses. The extension of cultivated lands during the past few years has been somewhat phenomenal. This has been materially aided, with the possibility of far greater extension in the distant Western country, by the system of irrigation. This has given thousands of families, who have purchased land at a very low price, an opportunity of possessing valuable and cultivated lands, enabled them to build good houses, given them a fair return for money invested and permitted some of them to show a balance in the national or savings banks. In making this extended trip the thought was constantly before the writer, No country can compare with ours in the possibilities within its reach. Distant Western cities have naturally largely profited in the development of this comparatively new Western farming country.

**THE GREAT LAKES.**—Leaving Buffalo by steamer over

the chain of lakes, too much credit can hardly be given to the management of the recently built lake steamers. They are strong, good meals are furnished, and one finds them quite as comfortable as the steamers for European trips.

**DULUTH, MINN.**—This is a progressive city, and it may well be proud of the large Hardware stores located there. The new building of the Marshall-Wells Hardware Company stands prominently before you when you arrive—a grand building covering a large space of ground, many stories in height, filled with a large stock of goods and with every appearance of business activity. Kelley-How-Thomson Company has a fine building, conveniently located, carrying a large stock of goods and showing every evidence of prosperity. One can spend a day going over the city and visiting the business houses, not omitting a drive in the park.

**ST. PAUL AND MINNEAPOLIS.**—Both these cities indicate an enlargement of trade conditions and have grand business houses. Farwell, Ozmun, Kirk & Co. of St. Paul are building a very large new store to meet the requirements of trade. Janney, Semple, Hill & Co. of Minneapolis are a thriving and driving Western house, showing signs of great activity, and Nelson-Holliday-Bouquet Hardware Company of Minneapolis has recently been bought out by Hurty-Simmons Hardware Company, and like the other firms mentioned showed great courtesy to the writer. The agricultural region tributary to these two great cities showed fine crops for which good prices are likely to be obtained and the country tributary is in very fine condition.

**YELLOWSTONE NATIONAL PARK.**—Nine days devoted entirely to sight seeing were spent in the Park, this being an exceptional year for visitors. From 16 to 24 coaches containing nine to eleven passengers each left the Mammoth Springs Hotel each morning, visiting the many geysers found within the park, the hot springs, several falls and the Grand Cañon, the latter some 1200 feet deep and beyond description in its grandeur and magnificence. The Old Faithful Inn within the park is a unique structure and an imposing building made entirely of boulders and logs. For a full description of the park it might be well for your readers to write to A. M. Cleland, general passenger agent, Northern Pacific Railway, St. Paul, Minn., for a booklet which is furnished free.

**PORTLAND, OREGON.**—In going from the Yellowstone Park to Portland one passes over cultivated grounds, cattle ranches and the interesting sight of sage bushes and wild flowers until he reaches the beautiful city of Portland. Portland is certainly entitled to great credit for suggesting and successfully arranging for the Lewis and Clark Exposition, which with the aid of the railroads has resulted beneficially to our country at large. The Exposition has been judiciously advertised and has induced many thousands of persons to familiarize themselves not only with the vastness of our country but the wealth and productiveness of our soil, with the untold grandeur of scenery, including the high mountains covered with snow to be seen from the grounds and between Portland and Tacoma, where views are obtainable of the grand snow-clad and glacier covered peaks and mountains of St. Rainier, St. Helens, Adams, Hood and Jefferson, ranging from 9000 to 14,000 feet above the ocean level.

The Exposition buildings and the contents of the same are both creditable and attractive. The grand display of fruit grown in the surrounding country is surprisingly fine. The lawns surrounding the Exposition buildings are beautifully laid out and kept in fine condition and the flowers grown on the grounds as well as in the gardens of the residences show the results of the delightful climate, the rose bushes and roses being unsurpassed outside of lower California. The president of the Exposition and his co-workers are courteous gentlemen and entitled to great praise.

The city of Portland is a beautiful city, with fine business houses and handsome residences, a magnificent park and well paved streets. The Hardware houses are large and well stocked with goods. Honeyman Hardware Company has a large wholesale department and a creditable



retail department and the display in the windows of the latter surpasses anything seen by the writer in this country. The old firm of Corbett, Failing & Robertson has extensive buildings and the business is well conducted by Mr. Robertson, who was found in his usual good health and social qualities. Marshall-Wells Hardware Company also has a branch house here and occupies a new building of its own but recently completed.

**TACOMA.**—While we entered this city both going to and returning from Portland, former engagements prevented stopping there, but its enterprise is visible not only opposite the Fair Grounds but in other locations, where large signs are posted with the words: "See Tacoma Grow."

**SEATTLE.**—Within a radius of 300 miles of Seattle there are over 1,300,000 people. The development of this city during the past five years from a population of 80,000 to 160,000 is somewhat phenomenal. There are two large streets extending to the hilltops, with fine residences, where five years ago large trees only covered the ground. The buildings in the various business streets are large and fine. Several hotels are located on the various streets and the Washington Hotel on the hilltop, from which you obtain a fine view, is creditable to the city. Seattle has a very fine, well equipped club house, and through the courtesy of the two Hardware houses there we were invited to luncheon each day of our visit. The Seattle Hardware Company has about completed its new and magnificent building, 140 x 220 feet, seven stories in height, with a large basement. It is lighted from all sides, and is well equipped with elevators. This building will enable the company to well conduct its large and growing business. Schwabacher Hardware Company completed a new building a year ago, which was burned down immediately after occupancy. The company at once started to erect a fine and elegant building, which will be completed within the next few months and enable it to conduct efficiently its large and growing business. Both these houses, in addition to the trade adjacent to the city, have a large and growing trade with Alaska, with excellent transportation facilities from Seattle. The lumbering districts throughout this country are large, with many saw mills, which has aided materially to develop the trade of these cities.

**VICTORIA AND VANCOUVER.**—These cities are reached by steamer, a beautiful trip, and it will well repay one to stop at each of these points. Vancouver is growing largely through the increase of population in British Columbia and the development of that country, which possibly might have belonged to the United States had the same diplomacy been shown by our country in 1845 as has been the case in later years.

**CANADIAN PACIFIC RAILROAD AND ROCKIES.**—It would be impossible to give any intelligent idea of the grand scenery from Vancouver to Banff in this short space. We felt it exceeded (so far as the writer has seen) any scenery in this or foreign countries. The grandeur is beyond description. The main stopping points are The Glacier, Field, Lake Louise and Banff, where are seen snow capped mountains, glaciers and fine lakes, rivers and waterfalls. In some instances where the mountains are ascended the trains are separated into four sections and four engines are required for the elevation. When one reaches an altitude of 5000 feet and over it makes him feel many years younger, if his heart is right.

We beg pardon for taking so much space in your valuable journal and yet not doing justice to the trip, which no one could help but enjoy.

### St. Paul.

**FARWELL, OZMUN, KIRK & Co.**—Conditions continue good. Weather has been very favorable for threshing small grain; also for maturing fall crops. Grain has fully matured and will be a valuable crop. Farmers just now are too busy to trade much, but will be in good shape later. Business is fully equal to expectations. The general tendency toward firm prices affects trade favorably. Collections show that the grain movement has begun.

### Portland, Oregon.

**CORBETT, FAILING & ROBERTSON.**—It is like awakening from a Rip Van Winkle sleep for a pioneer of 1855, as is the writer, to grasp and realize what the developments of the last few weeks mean to Portland, Oregon, and Washington. The Northern Pacific Railway and the Great Northern Railway have decided to build down the north bank of the Columbia River, to avail themselves of the water level grade that is now enjoyed by the Union Pacific Railroad on the south bank, thus avoiding the heavy haul over the Cascade Mountains, by which they now reach Puget Sound. Construction work has already commenced, meaning the expenditure of millions of money and the employment of thousands of laborers for the next 15 or 18 months.

The Northern Pacific Railway Company since our last letter has bought 31 blocks of land in the north end of Portland to increase its present terminal facilities, meaning \$1,000,000 that will have to be reinvested in this community from the sale of property. It is but a few months since the stock of one of our street railways was sold to Eastern people for \$6,000,000, subject to \$3,000,000 of bonds still held here and proceeds of which have not yet been entirely reinvested.

Eastern people supposed to be connected with the Northern Pacific and Great Northern Railways, together with local parties, have bought five blocks, covered with residences, near terminal yards here and propose to erect five and six story warehouses, with railroad tracks running through center of buildings, for some 20 large wholesale houses, entailing expenditure of a large amount of money in erection of buildings.

There never was more building in Portland in hand and contemplated than at present, showing that the close of the Exposition will not result in any depression, as at one time was feared.

The live stock show at the Lewis and Clark Exposition has demonstrated to the world that Oregon and Washington have cattle, horses, sheep, goats and hogs that in competition are prize winners every time. Stockmen from the East say that the stock exhibit is superior in quality if not in numbers to that which was made at St. Louis. In consideration of the above facts we are not pessimistic this week, anyway. Trade is good, collections are fair and bound to be better.

### Omaha.

**LEE-GLASS-ANDRESEN HARDWARE COMPANY.**—The month of September closed with very satisfactory results as to volume of business transacted. The consumption of goods still grows heavier as the season advances, confirming our predictions given in former reports.

The commercial as well as the producing communities regard the future of trade with the utmost confidence. Large crops this season, together with substantial values for everything the agriculturist produces, are a sure basis on which to predict the future course of general business.

Indications of enterprise both by corporations and private citizens are observable on every hand. With these conditions existing, the prosperity and financial condition of the Trans-Missouri country remains on a substantial basis, which will be likely to continue, at least until the future of next year's crops can be ascertained.

### Cleveland.

**THE W. BINGHAM COMPANY.**—Trade and traffic in all lines of Hardware, Mining, Milling and Manufacturing supplies have been very active during the month of September, and sales will show a large increase over a year ago at this time. Many orders have come to us from all sections for Merchant Pipe, Malleable, Cast and Brass Fittings, Valves, &c.; in fact, the demand has been so great that it has been pretty hard to supply it as promptly as we would like. Builders' Hardware, such as House Trimmings, Locks, Latches, Knobs and Lock Sets, have been moving quite freely.

Fall goods, such as Lanterns, Oil Heaters, Husking Gloves, Corn Knives, Axes, Cross Cut Saws, and Buck Saws, are now going forward. Our salesmen are send-

ing in well assorted orders for holiday goods, Pocket Cutlery, Carvers, Scissors, Razors and the like. Trade has been very good, and we anticipate a continuing increase through the remainder of the year. Considering the time of year, when so much money is needed for moving crops, &c., collections are quite satisfactory.

#### Nashville.

**GRAY & DUDLEY HARDWARE COMPANY.**—Business conditions are constantly improving in this section of the country. The manufacturers and jobbers of this city not only in Hardware but in all lines are enjoying a large volume of business at this time. The fall trade is very heavy and the merchants of the South are buying liberally.

Conditions throughout the South are now very satisfactory indeed, the crop prospects are quite good and the price of cotton is gratifying to the Southern people. The mining industries were never so prosperous as they are now; this is especially noticeable in the coal and iron lines. In addition to this the movement of all commodities such as live stock, lumber and farm products is very heavy. The retail merchants in the South are in good condition and the majority of them are doing a splendid business. They are carrying well assorted stocks and are buying liberally, though discreetly, and are coming nearer discounting their bills than usual.

The Hardware market is in splendid shape, prices are very firm and a great many advances have taken place since our last letter. The change sheets going out to the traveling salesmen are filled up with advances which have occurred and there is no trouble in getting the advance prices. We look for first-class trade during the fall and winter months.

#### Louisville.

**BELKNAP HARDWARE & MFG. COMPANY.**—The market still continues in an active, healthy condition. Some advances have been made and, again, others are promised, and, what is better still, we all believe in them either for the immediate present or in the nearby future. At least, the possibility is so strong that we are not the victims of incredulity as in times of fictitious bolstering up.

The buyers warn us that margins are not to be thrown away, as they are impossible to duplicate on new purchases, and the selling department is having more of a "picnic" than is usual at its end of the line. It is seldom that we do not have as many grunts and groans from these gentlemen as the proverbial farmer over droughts and floods. Just now they are in a wonderfully good humor.

Our respects to your prominent St. Louis correspondent for his happy suggestion that those gentlemen who are so persistent and keen in advocating factory brands solely should put their own brand on their own letters. If names are the all important feature on a saw or hatchet or pocket knife, they should also belong to publicly printed communications of this kind. The temper of an article has something of the same interest to the trade as the temper of a hand saw. We want both fully warranted.

### NOTES ON PRICES.

**Wire Nails.**—The trade were surprised at the announcement made by the leading interest late on the afternoon of September 28 of another advance of \$1 per ton on Wire and Wire products, to take effect from date. The surprise was not so much at the advance as because it followed so soon upon the readjustment of prices of September 11. The other mills have also announced a corresponding advance. The sale of Wire and Wire products during September broke all records. The market is in good condition, prices are firm and demand brisk. Quotations are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

Carloads to jobbers .....\$1.80  
Carload lots to retail merchants..... 1.85

**New York.**—In view of the advance of 5 cents per keg in the price of Wire Nails on September 28 quotations

for small lots from store are now \$2 to \$2.05, base. Demand continues active.

**Chicago.**—An advance of \$1 a ton on Wire Nails, entirely unexpected by the trade, was announced on September 28 by the leading interest, and the independent manufacturers immediately followed with a similar advance. The tonnage booked during the month of September exceeded that of August, which was one of the largest months in the history of the trade, and despite this recent advance a big tonnage is expected during the present month. We revise official prices as follows: \$1.95 in car lots to jobbers and \$2 in car lots to retailers, with 5 cents higher for less than car lots from mill.

**Pittsburgh.**—A meeting of all the Wire Nail interests was held in Chicago on Thursday, September 28, at which prices were advanced 5 cents a keg. Reports submitted at the meeting by the manufacturers showed that demand for Wire Nails is unusually heavy for this season of the year and this, together with the high prices of Steel, is given as the reason for this second advance in price within a month. It is said the tonnage in Wire Nails placed in August was the heaviest in any one month in the history of the Wire Nail trade. The supply of cars is not satisfactory, entailing more or less delay in shipments, and Steel is also exceedingly scarce. We quote Wire Nails at \$1.80 in carloads to the largest jobbing trade, which is absolute minimum of the market, and \$1.85 in carloads to retail merchants, f.o.b. Pittsburgh, plus actual freight to point of delivery, terms 60 days, less 2 per cent. off for cash in 10 days.

**Cut Nails.**—No arrangement was made at the meeting of the Cut Nail Association, which was held September 26, to have an automatic advance in the price of Cut Nails follow any advance in the price of Wire Nails which might take place before the next meeting. Consequently no change has been made in the price of Cut Nails. A report is current that some of the outside mills favored an advance in price being made by the association. It is, however, doubted whether any assurance was given that they would maintain it. Quotations are as follows: \$1.65, base, for carload lots, f.o.b. Pittsburgh. Iron Cut Nails for delivery at Pittsburgh, Buffalo and all points west of these cities are held at \$1.75, base, in carload lots.

**New York.**—Local demand is good and prices remain unchanged. Quotations for small lots from store are on the basis of \$1.90.

**Chicago.**—The reaffirmation of prevailing prices on the basis of \$1.65, Pittsburgh, was in reality an advance of \$1 a ton in this market. For some time quotations have been on the basis of \$1.75, but have now been advanced to \$1.80 on Steel Cut Nails in large lots to jobbers, f.o.b. Chicago. Car lots to retailers \$1.85, and less than car lots, \$1.90. Small lots from store, \$2, base. Iron Cut Nails are quoted at \$1.85 in carload lots. Demand has improved and jobbers report a fairly heavy movement.

**Pittsburgh.**—Demand is steadily improving, and more new orders for Cut Nails are being placed than for some time, the trade having placed liberal orders in view of an expected advance in prices. Now that Wire Nails have again been advanced it is not unlikely that similar action will be taken in Cut Nails before long. We quote Cut Nails \$1.65, base, in carload lots, f.o.b. Pittsburgh, an advance of 10 cents per keg being charged for Iron Cut Nails.

**Barb Wire.**—The advance of \$1 per ton in the price of Wire products on September 28 also applied to Barb Wire and Fence Staples. Demand has been very satisfactory from jobbers. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Galv.
Jobbers, carload lots.....	\$1.95	\$2.25
Retailers, carload lots.....	2.00	2.30
Retailers, less than carload lots.....	2.10	2.40

Plain and Galvanized Fence Staples are 5 cents less than Painted and Galvanized Barb Wire.

**Chicago.**—An advance of \$1 a ton became effective last week on Barb Wire. The advance on this com-



modity at this season of the year was of course entirely unexpected, and as the movement is not very great during the fall months no very great tonnage will be affected. Official quotations are revised as follows: To jobbers, Chicago, car lots, Painted, \$2.10; Galvanized, \$2.40; to retailers, car lots, \$2.15; Galvanized, \$2.45; retailers, less than car lots, Painted, \$2.25; Galvanized, \$2.55; Staples, Bright, in car lots to jobbers, \$2.05; Galvanized, \$2.35; car lots to retailers, 10 cents extra, with an additional 5 cents for less than car lots.

**Pittsburgh.**—At a meeting of the manufacturers held in Chicago last week prices were advanced \$1 a ton, effective from October 28. Demand is very satisfactory, jobbers placing liberal orders for some time. A shortage in supply of cars and also in Steel is retarding prompt deliveries to some extent. We quote Painted Barb Wire at \$1.95 and Galvanized at \$2.25 in carload lots to the large jobbing trade, with the usual advance of \$1 a ton to retailers in carload lots, f.o.b. Pittsburgh, 60 days, or 2 per cent. off for cash in 10 days.

**Smooth Fence Wire.**—Included in the advance of \$1 per ton of September 28 was Smooth Fence Wire. The demand during the month of September exceeded that of August. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days: Jobbers, carloads.....\$1.65  
Retailers, carloads.....1.70

The foregoing prices are for base numbers, 6 to 9. The other numbers of Plain and Galvanized Wire take the usual advances, as follows:

	6 to 9	10	11	12	12½	13	14	15	16
Annealed.....Base	\$0.05	.10	.15	.25	.35	.45	.55		
Galvanized....	\$0.30	.35	.40	.45	.55	.65	1.05	1.15	

**Chicago.**—Large contracts for Annealed Wire were placed by Fence interests during the month of September and very few manufacturers will be affected by the advance of \$1 a ton which went into effect on September 28. The tonnage placed during September of Smooth Fence Wire exceeded that of the month of August by a large percentage. We revise quotations as follows: \$1.80 to jobbers, f.o.b. Chicago, in car lots, and to retailers, car lots, \$1.85.

**Pittsburgh.**—A heavy tonnage is being placed, orders for September being very much larger than in August. The manufacturers advanced prices \$1 a ton at a meeting held in Chicago last week. The shortage in supply of cars and in Steel is interfering with shipments to considerable extent. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Jobbers, carloads.....	\$1.65
Retailers, carloads.....	1.70

The above prices are for base numbers, 6 to 9.

**Sash Weights.**—Manufacturers of Sash Weights report a large demand, which comes as the result of the extensive building which is going on throughout the country. This has had the effect of strengthening the market, and with the higher prices which rule for Iron justified the announcement of higher quotations by the leading manufacturers, as noted in our last issue. While there is not entire uniformity in the prices of Sash Weights in the different sections of the country, the market is in excellent condition, and there is a general tendency toward better prices, and the low quotations obtainable a short time ago are generally withdrawn. Owing to their occupation with more profitable business some foundries which make Sash Weights rather as a side line are not manufacturing them at present.

**Chain, Coil, Trace, &c.**—Within a short time another advance has been made by the manufacturers of Coil Chain, so that considerably higher prices prevail than were current at the opening of the year. The market is characterized by a decidedly firm tone and the manufacturers report a demand which taxes their capacity. An increase of 25 cents per hundredweight in the extras on B.B. and B.B.B. quality has recently been put into effect. It is noticeable, too, that the price of 3-16-inch Chain is relatively higher than it was a few months ago.

**Bolts, Stove and Tire.**—The market in both Stove and Tire Bolts shows decided signs of irregularity, and

on Stove Bolts especially prices considerably lower than those which have been ruling are obtainable. The market, indeed, gives signs of being open instead of under association control as heretofore.

**Extras on Steel Tires.**—The following changes in the extras on Steel Tires became effective September 26:

Planished or smooth finish.....	\$1.70, base, Pittsburgh.
Iron finish, up to 1½ x ½ inch.....	1.65, base, Pittsburgh.
Half extras to be added on both of the above items as per the following schedule:	
1 x ¾ inch and heavier.....	Base.
1½ x 3-16 and 7-32 inch.....	\$0.20 extra.
1 to 1 7-16 x 3-16 and 7-32 inch.....	.30 extra.
¾ and ¾ x 7-32 x ¾ inch.....	.50 extra.
¾ x 3-16 inch.....	.50 extra.
¾ x 3-16 inch.....	.80 extra.
¾ x 3-16 inch.....	1.00 extra.
¾ x ¾ inch.....	1.10 extra.
Iron finish, 1½ x ¾ inch and larger.....	\$1.50, base, Pittsburgh.
Half bar steel extras to be added.	
Channels for Solid Rubber Tire, as follows:	
¾, ¾ and 1 inch.....	\$2.00, Pittsburgh.
1½ inch and larger.....	1.90, Pittsburgh.

**Copper Products.**—The market on Copper products, including Brass material, remains unchanged in price since the changes published two and three weeks ago, following which there was a short period of hesitancy and unsteadiness, which now appears to have passed. Business is reported good in these related lines, with a somewhat firmer tone in prices.

**Bolts, Carriage, Machine, Etc.**—The market for Carriage and Machine Bolts is considerably firmer, with a continuance of the heavy demand previously noted. Although manufacturing plants are being operated to their fullest capacity mill shipments are exceedingly slow and buyers needing stock are dependent upon the market supply, which, especially in the larger sizes, is getting low. It is reported that some large producers have practically withdrawn from the market, and those who are still able to take on new contracts are naturally stiffening their prices.

**Axes.**—Our attention has been called to an error in our last issue in our reference to the Axe market, where the difference in price between Single Bit and Double Bit Axes was given as \$2, when, in matter of fact, it should have been \$2.25. The present prices of the association are thus \$6.75 for Single Bit, base weights, and \$9 for Double Bit, base weights.

**Hatchets.**—At the recent meeting of the Hatchet Association several important matters received the attention of the members. The most important to the trade was a 10 per cent. reduction in the price of the regular line of first quality Hatchets, the discount being made 50 per cent. instead of 40 and 7½ per cent., as heretofore, with the same rebates to jobbers on the classified lists. There was also something done in the direction of recasting the membership of the association, as at least one outside competitor was brought into the fold. In regard to one or two of those who have been identified with the association or in close alliance with it steps have been taken looking to a severance of their relations with it. The leading manufacturers seem to be working in entire harmony, but the situation is such as to make the trade await further developments with interest.

**Rope.**—The market is becoming more regular under the improved demand and firmer market for raw material. There appears to be an absence of stock orders and purchasers are providing for their nearby requirements only. Quotations on the basis of 7-16-inch diameter and larger are as follows: Pure Manila, 12 cents; Pure Sisal, 10 cents; No. 2 quality Sisal, 8 cents per pound. The New York Times' press reports from Manila place the estimated loss in the Hemp growing districts by the recent typhoon at \$5,000,000 gold. The plantations, it is stated, are impaired to such an extent that it will take a year to get them in condition again, while Hemp in warehouses is also referred to as a total loss. If these estimates are correct the price of Manila Rope will be affected for some time.

**Putty.**—A recent advance of 5 cents per 100 pounds in the price of commercial Putty was made by the Association of Putty Manufacturers in New York and vicinity owing to the increased cost of raw materials. The following range in prices represents the market for various quantities:

Bladders .....	\$1.65 to \$1.85
Barrels and tubs.....	1.20 to 1.40
Tins, 1, 2, 3 and 5 pound.....	2.60 to 2.90
Tins, 12½, 25 and 50 pound.....	1.45 to 1.85

**Glass.**—There has been little improvement in the manufacturing situation during the week. The manufacturers, who favor the sliding scale of wages, are determined to operate their plants only under this scale. The workmen, who adhere to the flat scale of wages, are as determined to work under no other. Each side claims that in time it will be victorious. The hand made Glass capacity now in operation is reported as being equivalent to between 950 and 1000 pots, the larger portion of which is being operated under the flat scale. It is understood that some manufacturers are still quoting from the price-list of January 1, 1901, while others are using the list that was adopted August 1, 1905. Under date of September 30 manufacturers of Plate Glass advanced prices 5 per cent. New York quotations are as follows:

	Discount.
3 to 5 square feet.....	.80 and 10 %
5 to 10 square feet.....	.80 and 20 %
Above 10 square feet.....	.85 and 10 and 5 %

**Linseed Oil.**—The lower price of Flax Seed, together with the wide spread between the price of spot Oil and that for future delivery which has recently caused an irregular market, has resulted in a reduction of 9 cents per gallon in price of spot Oil. This reduction in card prices is only an official recognition of the actual prices at which Oil has recently been sold. Oil for immediate delivery is scarce and will probably continue so for the coming two weeks, or until Oil from the new crop of Seed is put on the market in considerable quantity. Buying for immediate requirements has been confined to small lots owing to the price. Contract Oil for delivery up to January 1 has been sold on the basis of 35 cents for State and Western Raw. New York quotations for prompt delivery are as follows: City Raw, 45 to 46 cents per gallon; State and Western Raw, 43 to 44 cents per gallon, according to quantity.

**Spirits Turpentine.**—Prices have advanced 2¼ cents per gallon during the past week, in sympathy with an advancing Southern market. New York quotations are as follows, according to quantity: Oil barrels, 68¾ to 69¼ cents; machine made barrels, 69¼ to 69¾ cents.

## THE MANUFACTURERS' CONVENTION.

**T**HE coming annual convention of the American Hardware Manufacturers' Association at Washington, D. C., November 7, 8, 9 and 10, headquarters at the New Willard Hotel, promises to be of more than usual interest.

The programme, the outline of which has been determined, indicates that it will be a business convention in every respect. All of the sessions will be of an executive character, although arrangements are being made for one session, that of Thursday afternoon, November 9, when the members of the National Hardware Association, who will be holding their annual convention at the same time, will be invited to participate. At this session the report of the Wholesale and Retail Hardware Joint Committee on the Catalogue House Question will be presented by the jobbers. Other subjects will also doubtless come up at this session, which will be one of the most important of the convention.

## NEW YORK HARDWARE JOBBERS.

**T**HE annual meeting of the New York State Association of Hardware Jobbers will be held at the Fort Orange Club, Albany, on the 12th inst. The business session will be called to order at 11 A. M., dinner taking place at 2 o'clock. A large representation of the membership will, it is expected, be in attendance.

WE regret that through a typographical error the address of Joseph McKellar was incorrectly given in his page advertisement in our last issue. Mr. McKellar's street number was given as 12 Tremont street, when it should have been 1112 Tremont street, Boston, Mass.

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## Correspondence.

### A LETTER FROM SIMMONS HARDWARE COMPANY.

To the Editor: In *The Iron Age* of September 14 there appears under the heading of "From Merchants in Missouri" a letter which in so far as it may concern us is so misleading in statement and so entirely unfair that we feel you will be glad to give equal prominence to a statement of the truth in the matter.

We take it for granted that the writer of the article is not intentionally and knowingly publishing a falsehood for the purpose of injuring us; we are quite willing to believe that he is simply misguided and has allowed some one to abuse his confidence, and believes what he writes to be a fact. Unfortunately, he does not sign his name, so we have no means of enlightening him by writing him direct and therefore take this way of laying before him—and any others who may have been misinformed—the real facts of the case.

The writer speaks of a jobbing house having a retail store and further states that quotations are made from that store to consumers in the country at very low prices and intimates that the wholesale house simply uses this store as a subterfuge to do in an underhand and devious method what it claims openly not to do.

If the writer in question had done as others had done when similar impressions were created in their minds, viz.—had come here to investigate the matter for himself—or if he had written to us and asked for an explanation, indicating that he wished to be entirely fair with us, and that he would be very glad to have the facts in the case, he would have learned, as others have, that there is nothing connected with our retail establishment detrimental to his interest; that on the contrary it has always been run in such a way as to be a protection and help to the Hardware dealer both in the city of St. Louis and vicinity. The retail Hardware dealers in St. Louis are as a rule prosperous men, and we believe a large part of this has been due to the protection accorded them by our retail store.

We have never quoted prices from our retail department to people outside the city of St. Louis, and have always declined to accept orders or ship goods to any one, in every case referring them to local merchants.

It has been our constant and uniform plan to carry out this policy undeviatingly ever since the establishment of our retail store. Surely it seems obvious enough that as a matter of good sense and self-interest we would protect the retail Hardware man in St. Louis and in the country, since he is our customer and has been our consistent friend during long years of business dealings.

It isn't necessary to go into the details other than to state that we shall be very glad to have the truth of our position fully investigated, and we extend to the writer of that article—and this is open to any Hardware dealer in the United States who may have been misled in a similar manner—an invitation to come and investigate this matter with the understanding that the trip is at our expense if he is not entirely satisfied in regard to the correctness of our policy and the fact that we uniformly protect the retail Hardware merchant. It isn't necessary for him to do otherwise than drop in on us at any time, state the object of his visit, and we will give him access to all the facts.

We believe that no merchant has ever visited us and become thoroughly acquainted with our business and the principles on which it is conducted without having it command his respect, or without feeling that it is run as strictly in accordance with the principles of straightforwardness and fairness to all interested as he or any one else could run it, that having been the result—as far as we know—in every case where the retail Hardware merchant has paid us the compliment of calling on us and showing an interest and desire to know us better, and it is needless to say that we shall appreciate having many more accept the above invitation.

SIMMONS HARDWARE COMPANY.

### FACTORY BRANDS.

From a Hardware House in Mexico: Since everybody is having his say anent the question of special brands, a few words from a distant country may not be amiss. A prominent jobbing house has for some time been trying to make us see our way to putting in their special brand of Tools; we have heretofore handled factory brands exclusively. At the time this present agitation of the subject commenced we were "almost persuaded," as the hymn has it, but decided to await the progress of the discussion. Meantime we had a little experience of our own which makes us see that factory brands are just a little better for us.

We bought from our jobbing friends for a year or two occasional small lots of Paint Brushes made by one of the best manufacturers and which were therefore always entirely uniform and satisfactory. On his last trip we asked the representative of the house for the same goods. They had dropped that number, but were sending out instead their own special brand, "a little better and at the same price." When the goods came they were a nice imitation—same color, same size and shape, but materially inferior as to the essential part, the bristles. For fear that sooner or later the same thing will happen with special brand Tools, we will continue our old policy of buying factory brands only. It is more important to us to have a reputation of selling high class goods than it is to make a trifle more profit for a while. Nor are the special brand goods usually as good as factory brands of equal cost.

### BUSINESS CONDITIONS IN WESTERN WASHINGTON AND IDAHO.

FROM A SPECIAL CORRESPONDENT.

BUSINESS has been good in all lines allied with Implements or Hardware. In fact, jobbers report the best season they have ever had, July and August being very busy months. With the advent of September things have slackened a little from their former pace, and in the interim merchants are preparing for the busy fall months which are sure to follow. September brings with it thought of collections and these should be easy. The crop is an unusually large one, and the weather has afforded every opportunity for the easy caring of it. The price of all cereals, while not as high as last year, is large enough to leave a good margin for the farmer after paying all expenses. The increase in acreage in this section is also quite marked, much new and raw land coming into the producing column for the first year. This of course adds to the farmers' profits and in turn to the dealer in Hardware and Implements, for it requires added Hardware and Implements with which to bring the added acreage into use. Taken all in all the merchant who has acted wisely and well will find that when he takes his inventory at the end of the year the red ink balances will be on the right side of the page, and 1905 will go down in Hardware and Implement history as one of the best, if not the best, year the Inland Empire has seen in a decade.

#### Notes of the Trade.

Smith Bros. will shortly open a new Implement and Hardware store at Kohlotus, Wash.

The John Smith Hardware Company of Walla Walla, Wash., is about to open a branch at Prescott, Wash. A building is now in the course of construction for its use.

Porak & Son, formerly of Plaza, Wash., are about to engage in the retail Hardware business at Connell, Wash.

The Connell Hardware Company of Connell, Wash., which was recently burned out, will rebuild.

The Odessa Hardware & Implement Company of Odessa, Wash., will build a new brick building across the street from its present quarters. The building will be one story, pressed brick and plate glass front, 75 x 125 feet, and a full basement.

Adam Knox, the veteran Hardware merchant at Davenport, Wash., has had the damage done to his building and stock during the recent fire repaired and is again open for business.

The Lincoln Hardware and Implement Company of Kendrick, Idaho, is now settled in new quarters and

has one of the most finely equipped Hardware and Implement emporiums in Northern Idaho. The building is 100 feet square, brick with plate front, is well lighted and arranged. A complete stock of Harness and Saddles has recently been added.

Olson & Johnson of Troy, Idaho, have let the contract for their new store building. It will be of brick and modern in every way.

The Lewiston Fuel & Transfer Company is the title of a new corporation at Lewiston, Idaho. The company expects to handle Implements of all kinds.

Wallace, Corcoran & North, the Spokane Implement jobbers, have recently moved from their former location to the Hazlewood Block. Their new quarters will give them materially increased facilities.

## SUSPENDED P. O. ORDER UNDER INVESTIGATION.

FROM OUR WASHINGTON CORRESPONDENT.

WASHINGTON, D. C., October 3, 1905.

**A** THOROUGH INVESTIGATION into the merits and demerits of the projected system of permitting mail to be delivered to the patrons of rural routes by box number only and allowing postmasters to supply the number of routes and boxes on each route to applicants has been ordered by Fourth Assistant Postmaster-General De Graw, who has returned to Washington. The investigation will be made by 20 special agents, who have been ordered into the field in various sections of the country, and their reports will be carefully considered by Mr. De Graw and Postmaster-General Cortelyou before final action is taken in the matter. Mr. De Graw promises to deal with the question in the broadest and most thorough manner, and indications all point to the rescinding of the obnoxious order.

### Letters, Telegrams, Memorials and Petitions Galore.

When the Fourth Assistant returned to Washington he found upon his desk no less than 200 letters, telegrams, memorials and petitions from retail merchants in every section protesting against the recently promulgated order. These protests were couched in the most emphatic terms and urged the Department to rescind its action immediately. Mr. De Graw was greatly impressed by this demonstration, which reflects so accurately the views of the retail Hardware merchants of the country, and at once expressed his gratification that the new regulation had been suspended pending further inquiry.

After conference with his assistants he prepared an order to the staff of special agents whose duty it is to make inspections throughout the service, directing them to ascertain the sentiment among the retail merchants in all sections and also to make inquiries among the patrons of the rural routes, incorporating their conclusions in reports to be submitted to the Department as soon as practicable.

### A Statement from Mr. De Graw.

Mr. De Graw promises that he will give this question the very careful consideration its importance demands and that the general welfare of the country at large will be taken into account in deciding whether the regulation shall be rescinded or allowed to stand. In an informal talk with the correspondent of *The Iron Age* Mr. De Graw stated very frankly the circumstances under which the recent order was prepared and promulgated. His statement is interesting as showing the attitude of the Department toward the rural service. He said, in part:

The superintendent of the Rural Free Delivery became convinced that in order to enable carriers and local postmasters to keep correct rosters of their routes and to identify all letter boxes thereon such boxes should be numbered serially. I saw the force of this suggestion and approved it, especially as at that time we had received complaints that substitute carriers were greatly hampered in the discharge of their duties by their ignorance of the ownership of boxes on the routes occasionally served by them.

The suggestion was then made that Congressmen would find it more convenient to send out their annual allotments of seeds if permitted to address the packages to rural boxes by num-

ber only, thus doing away with the necessity of collecting long lists of names. I think I may say that this proposition was uppermost in my mind when I had under consideration the plan of permitting the delivery of mail matter on rural routes by box number only.

At the same time I am free to say that I could not then see and do not now see how we can fully justify, from a purely Governmental standpoint, a discrimination which permits the delivery of mail matter addressed by number only to lock boxes in the city post offices while denying to the patrons of rural routes the privilege of receiving mail in the same way. I admit that from other points of view there may be strong arguments against applying this regulation to the rural service, but when this move was under consideration I looked at it solely from the standpoint of the Department, which must always endeavor to deal as fairly as possible by all patrons of the postal service.

Before issuing the order I took the matter up with Postmaster-General Cortelyou, and I think in our conference the point that we dwelt upon chiefly was the revenue to be derived from the proposed change. I argued that we ought in every legitimate way to increase the revenue from the rural free delivery service, which at present nets a heavy loss and makes a big annual deficit in the postal revenues.

Something was said with regard to the possible use that might be made of such a regulation by the mail order houses, but it had not occurred to me that it would be of any particular value to them, and I confess I thought that any live, up to date retail merchant would be able to take care of his trade in spite of what these so-called catalogue concerns might be able to do. I knew that the rural service had been more or less demoralized by the efforts of these houses to secure names and addresses of patrons of rural routes, and it seemed to me that if I should issue this order it would put an end to the efforts to secure lists of addresses by purchasing them from postmasters and rural carriers contrary to the regulations.

In conferring with the Postmaster-General I expressed the opinion that there were certain inequalities and discriminations inseparable from the postal service, and I cited the case of the country merchant who happens to be also the postmaster in the town in which he carries on his business. He undoubtedly has great advantages over his competitors in that community, not only because many people are attracted to his store on account of the fact that he is the postmaster, but also because he necessarily knows the names and addresses of all the patrons of the rural routes radiating from his town. Yet it is absolutely necessary to locate the post office in somebody's establishment, and the Department cannot consider the disadvantages under which the other merchants of the town must labor.

I can now see, of course, that this illustration does not apply if we consider solely the question of the effect of this ruling upon the small towns and cities of the country. The community does not suffer simply because one of its merchants has advantages over his competitors, but it is reasonable to assume that it would suffer if its trade was diverted to the great business centers in the large cities where this mail order business is carried on. The problem that is presented to me in this connection is a very interesting one, to which I am giving careful consideration, and I concede that the arguments put forward in behalf of the retail merchants are very forcible. Of course, my first duty is to the Department and the general Government, but I am very anxious not to do anything to injure the interests of any class of citizens.

I have heard considerable about the competition between the retailers throughout the country and the mail order houses, and I have had some illustrations brought to my attention showing the advantages of dealing with local merchants rather than sending one's money away and buying goods without being able to see just exactly what they are. An acquaintance of mine who is himself a merchant in New England recently told me of one of his customers who sent all the way to Chicago for an article which was advertised at \$2.58. He paid



50 cents expressage and 10 cents to a rural carrier to deliver the parcel, so that the total cost was \$3.18, and my friend assured me that he was selling an equally good article at \$2.50.

The retail merchants of the country may rest assured that the representations they have made will receive due consideration and that their interests will be kept in view in so far as they do not clash with those of the Government as it represents all the people of the country. The special agents who are now acting under the Department's instructions will undoubtedly supplement the communications I have already received with comprehensive statements of the opinions of retailers in all sections, and by the time the Postmaster-General is ready to consider the matter we will have a mass of testimony bearing on this question that will enable us to determine it in a manner that I trust will be entirely satisfactory.

#### The Protests

received at the Department are very urgent and are supported by strong arguments against any change in the policy which the Department has pursued for many years in treating the addresses of patrons of the postal service as strictly confidential. The special agents sent into the field will canvass retail merchants in all parts of the country, and readers of *The Iron Age* should therefore be prepared to state their views concisely and emphatically, giving the reasons for their belief that the order would injure their business and hence the communities in which they live.

#### Another Consideration.

Recent developments have demonstrated that the advantages that would accrue to the retail mail order houses from the proposed innovation are not the only considerations which must be taken into account. Already patent medicine concerns and get rich quick schemers are applying to postmasters for information under the new order, and it is beyond all question that if the regulation is permitted to remain in force the Department will open up a channel through which swindlers of every kind will be enabled to victimize the farmer. It is perfectly clear, therefore, that there is no force in the suggestion of the Department officials that the delivery of mail by box number on rural routes will be of any benefit to the patrons of such routes as a class.

The happenings of the past fortnight illustrate graphically the influence of the retail merchants of the country when concentrated in a good cause, but the battle is not yet won. There should be no relaxing of effort until the obnoxious order is finally rescinded.

W. L. C.

#### MUTUAL TRADING COMPANY.

THE MUTUAL TRADING COMPANY, whose offices are at 99 Chambers street, New York, is the title of a new organization incorporated with a capital of a quarter of a million dollars. The purpose of this enterprise is to represent as manufacturers' direct representatives and resident buyers, for both domestic and foreign trade, a number of important manufacturing concerns for advantageously disposing of their products in satisfactory quantities. The business at present is confined to the broad line of House Furnishing Goods.

As is well known, the American Wringer Company has long carried on a purely mercantile business supplementary to that of manufacturing its exhaustive lines of Clothes Wringers, supplying as resident buyers many commodities to merchants selling its Wringers in the way of House Furnishing Goods and specialties. The American Wringer Company has now entered into a contract with the Mutual Trading Company under which the Mutual Trading Company will purchase for the American Wringer Company all the goods that the American Wringer Company will require for the houses who are still connected with the mercantile part of its business, as well as for other concerns, of which the trading company already have a number of clients.

As will be recalled by our readers, mention was made last spring of the retirement for rest and recuperation of George Reuter, Jr., on May 1, from the active general

management and treasurership of the American Wringer Company, a position filled by him since that company's organization. Mr. Reuter has been elected president of the Mutual Trading Company for the benefit of his advice on certain phases of the undertaking, but with the distinct understanding on his part that he is only to be called on in an advisory capacity, the burden of direction and management being carried by the company's other executive officers. W. J. Griffith, vice-president, is also president of the Land Title & Trust Company, Pittsburgh; C. C. Buckley, general manager, is likewise president of the Metropolitan Mfg. Company, Boston, and C. R. Browning, treasurer, was formerly president of the Metropolitan Specialty Company, New York. G. A. Reuter, assistant general manager and assistant treasurer, was formerly purchasing agent of the American Wringer Company, while the secretary, H. M. Masterton, is secretary of the Buckley-Newhall Company, New York. The company is making plans to do a large purchasing business for European houses also, and has placed with manufacturers some large orders.

#### AMERICAN TRADE IN BRAZIL.

SPECIAL AGENT HUTCHINSON of the Department of Commerce and Labor writes as follows from Rio Janeiro regarding complaints in the Brazilian trade of American business methods:

#### American Enterprise Spasmodic.

Much complaint is made as to the spasmodic character of American enterprise in the Brazilian market. A dull year in the domestic markets of the United States sends a flood of circulars and a horde of commercial travelers to South America in an attempt to get rid of surplus product. Usually these efforts are fairly successful, merchants here being induced by the excellence of the goods or by unusually low prices to enter into American connections. But the moment the home market shows improvement the American exporter grows indifferent and neglects or postpones attention to his South American orders. In short, Brazil is looked upon as a convenient dumping ground in times of need, while the demands of more regular trade are neglected.

This complaint I find is quite as universal as the one concerning careless packing. And in some cases the neglect takes the most exasperating forms. For instance, I was told a few days ago by one of the largest importers of goods from the United States, a man who fully recognizes the excellence of American manufactures and the possibilities of development of our trade, and who is anxious to do a larger business with us, that he has almost despaired of increasing his American purchases or dealing with any but a few of the largest and best known American firms. He told me of numerous cases in which, after forming new American connections solicited by the Americans themselves, he had had his orders neglected, or his shipments delayed, for months or even abandoned entirely, with no more satisfactory excuse (to him) than that the factory was "too busy" on other orders. Such connections he naturally abandons at once and for good.

#### The Keynote of American Failure.

This last complaint really strikes the keynote of the whole difficulty. American exporters have not met with greater success here largely because they have not made sufficiently persistent effort. There is not an importer here with whom I have talked, whatever his nationality, who has not told me emphatically that there is a big trade awaiting the Americans the moment they are ready to take hold of it with persistence and determination. But spasmodic efforts in the long run do more harm than good. The opinion just expressed that Brazil is ready to take American goods in very large quantities as soon as American manufacturers are ready to spare sufficient time from the demands of the home market to give proper attention to the peculiar needs of this southern continent is confirmed by the figures given in my fifth report. There it is shown that in spite of certain handicaps which our exporters suffer, in spite of the inadequacy of our methods as outlined in the present letter, our exports have suffered less in the past ten years of Brazilian depression than have those of any of our rivals, with the single exception of Italy. There is every indication that a relatively little effort in the right direction will turn our present decreasing trade into an increasing one. In fact, there are certain lines of our export trade in which there is already marked improvement.

## IMPLEMENT AND VEHICLE MAKERS IN ANNUAL CONVENTION.

**T**HE National Association of Agricultural Implement and Vehicle Manufacturers held their twelfth annual convention in Niagara Falls, September 27, 28 and 29. W. W. Collier of the American Harrow Company, Detroit, Mich., president of the association, presided.

The report of Secretary F. E. Lukens, of Chicago, placed the membership at 373. The receipts for the year were \$5,526.29 and disbursements \$4,753.02, leaving a cash balance of \$773.27.

The principal feature of the Wednesday afternoon session was an address by Judge Grosscup on the "Solution of the Transportation Problem."

Judge Grosscup's solution was to have a new department in Washington, or a branch of one of the present departments, that would do nothing else but hear complaints, investigate them and lay their findings before a special court for decision, this court to have no other business. The convention adopted a resolution favoring the suggestion.

Notable among the other resolutions adopted by the convention were the following:

*Whereas*, Representatives of the United States Department of Agriculture and the agricultural colleges have appeared before this association and explained the work which they are doing in the interest of users and manufacturers of Farm Implements; be it

*Resolved*, That we indorse and commend the agricultural engineering investigations of the United States Department of Agriculture and believe their extension will benefit both the users and makers of farm machinery;

*Resolved*, That a committee of three be appointed by the president to confer and advise with the proper Governmental authorities about the conduct and extension of these investigations.

We also recommend as a feature of these investigations the establishment of a laboratory and museum for testing and illustration of principles in farm mechanics.

*Resolved*, That we indorse and commend the teaching of farm mechanics and agricultural engineering in the various agricultural and other colleges, and that we pledge to all of this work our co-operation and support.

The Committee on Patents, P. A. Myers of F. E. Myers & Bro., Ashland, Ohio, chairman, made an interesting report, which dealt almost entirely with the new trademark law, which was the only patent legislation enacted since the last convention.

One of the principal addresses made before the convention was that of Dr. Elwood Mead, Chief of Irrigation and Drainage Investigations, United States Department of Agriculture, whose subject was "The Application of Power to Farm Work."

### New Officers

Chicago was selected as the place of the next meeting, and new officers were chosen, as follows:

PRESIDENT, C. F. Huhlein, B. F. Avery & Sons, Louisville, Ky.  
TREASURER, Jos. Dain, Dain Mfg. Company, Ottumwa, Iowa.  
VICE-PRESIDENTS: C. S. Brantingham, Emerson Mfg. Company, Rockford, Ill.; D. M. Parry, Parry Mfg. Company, Indianapolis, Ind.; Frank Slosson, Bain Wagon Company, Limited, Kenosha, Wis.; William W. Wiard, Syracuse Chilled Plow Company, Syracuse, N. Y.; Duane H. Nash, Millington, N. J.; W. R. Wooden, Nichols & Shepard Company, Battle Creek, Mich.; F. W. Brees, Brees Carriage Company, Macon, Mo.; C. E. Sheldon, Whitman & Barnes Mfg. Company, Akron, Ohio; E. R. Beeman, Monitor Drill Company, Minneapolis, Minn.; A. B. Farquhar, A. B. Farquhar Company, Limited, York, Pa.; C. B. Dempster, Dempster Mill Mfg. Company, Beatrice, Neb.; Wakefield Baker, Benicia Iron Works, Benicia, Cal.

EXECUTIVE COMMITTEE: H. E. Miles, Racine-Sattley Company, Racine, Wis., chairman; W. B. Brinton, Peru Plow & Wheel Company, Peru, Ill.; Newell Sanders, Newell Sanders Plow Company, Chattanooga, Tenn.; F. D. Suydam, Milburn Wagon Company, Toledo, Ohio.

### Foreign Commerce of the United States.

The report of the Committee on Foreign Commerce, of which F. E. Myers of F. E. Myers & Bro., Ashland, Ohio, was chairman, was as follows:

It is a self evident proposition that to hold and increase our foreign trade it is necessary to create a greater expansion of our industries through more direct communication and improved trade relations with the various foreign countries. This imperative need of expansion for the marketing of what we produce appeals to your committee to the extent of recommending the adop-

tion of every telling policy that will enable us to reach the markets of the world.

### WE MUST ADOPT THE BROADEST POSSIBLE METHODS

and equalize conditions in some way by subsidies or otherwise, so as to place us on a basis that will enable us to compete with other nations, and as far as possible transport our wares at the lowest ruling shipping rates and conditions.

Your chairman has always contended that if we can continue to keep our artisans employed during a nine or ten hour day and get results as at present, and as we have been doing in the past, we can compete with any country in the world substantially without protection.

There are no longer any "infant industries" needing a high protective tariff. Our observation is that while labor is cheaper in foreign countries it is not for the work done. The United States stands not only at the head of the great manufacturing nations of the world, but her manufactures equal those of the United Kingdom, France and Germany combined.

Our association produces a large part of the world's requirement in Implements and Vehicles. The civilized nations of the world want the product of our factories because of its acknowledged superiority in construction.

The manufacturer who has the ability to invent, build mammoth establishments and install the complex machinery of the present day should, in the judgment of your committee, have the capacity to market his product in competition with the markets of the world and be interested in securing the adoption of any and every feasible method that will secure this result.

Your committee, however, is more or less embarrassed to offer anything new or original in the light of the magnitude of the problem and the very able and exhaustive reports made by previous committees, but desires to call attention to a few subjects that it is believed will be of value to the members of the association.

Mr. Myers then refers to the project of a "floating exposition," in the shape of a large steamship loaded with American products in great variety, to be sent on a trip around the world. The consular service of the United States is then touched upon, allusion being made to the fact that much has been done of late years to raise the standard of efficiency of the nation's representatives abroad, but pointing out also that there is still room for improvement. "No permanent improvement," it is remarked, "can be possible until the present 'hit or miss' system of appointment gives way to one that will make possible not only the securing of capable men but also provide for promotion and transfer according to merit, and retention in office despite changes in Administration."

The remainder of the report touches on a variety of topics of interest to manufacturers generally, as follows:

### RECIPROCITY AND THE RECIPROCITY CONVENTION.

As the Executive Committee of this association appointed delegates to the convention recently held in Chicago, and as the president of the association will, without doubt, discuss the work of the convention, it will be referred to here only in so far as it bears upon the work of this committee.

### GERMANY.

Advices have been received from Germany since the above convention by which it is thought the German Government will not enforce its new tariff, to go into effect March 1 next, but will wait until the close of the next session of our Congress to give it time to adopt the recommendations of the convention.

### AUSTRALIA.

The Australian Parliament is now in session, and information just received is to the effect that a bill is being prepared and will soon be presented by which the United States will have the benefits of its minimum tariff in exchange for the same concession by our Government.

### RUSSIA.

During the past year Russia has put into effect a law which permits foreign corporations to do business in the empire on the same basis and subject to the same laws of registration and taxation as those incorporated in Russia. This gives American firms who do business in Russia a standing in their courts and legalizes contracts.

Late newspaper advices are to the effect that at a conference between President Roosevelt and M. Witte, the Russian peace envoy, the latter presented to the President the following communication:

Some years ago, in consequence of a misunderstanding in the interpretation of the most favored nation clause, there were established on several articles of American production customs duties on a higher scale than those levied on the same articles when imported from other countries.



His Majesty the Emperor of Russia has commanded me to inform the President of the United States that he has been pleased to order the discontinuance of the levying of such higher duties on American products, in order that henceforth the American manufacturers should pay the same duties as importers from other countries.

The customs duties referred to above which by the direction of the Emperor have been discontinued grew out of the imposition by the United States in 1901 of a differential duty on Russian sugar imported into this country. In retaliation the Russian Minister of Finance issued an order, which became effective March 9, 1901, imposing maximum duties on certain American articles, the increase ranging from 20 to 30 per cent. These increases affected cast iron wares, manufactures of iron and steel, iron and steel Boilers, Tanks, Bridges, Pipes, &c., Machinery, Sewing Machines, Motors, Dynamos, Portable Engines, Locomotives, Cars, Locomobiles, Fire Engines and Pumps. As a treaty of peace has now been signed by the envoys of Russia and Japan it is hoped with these concessions our trade with Russia will rapidly increase.

#### FRANCE.

Our trade with France suffered a heavy loss by reason of the failure to ratify the so-called Kasson treaty. Recent advices from reliable sources tend to show that trade on goods heretofore supplied by American makers is now being diverted to other countries or made in France. We are advised that Spring Tooth Harrows, Cultivators, Hay Rakes, Tedders and many other articles which were formerly shipped to France in large lots are now nearly all made there or are imported from Canada, which country enjoys the benefit of the French minimum tariff.

Not only does France impose her maximum tariff on American goods, but compels us to ship by steamers carrying the French flag at a high rate of freight, or, if shipped under other flags, imposes a differential duty of about 10 per cent. in addition to the regular maximum tariff. It will thus be seen that it will require aggressive work to regain this trade, even with reciprocal trade relations.

#### GERMAN PATENT LAWS, ETC.

The industrial advancement of Germany has been such within the last few years, and more especially the last year, that German manufacturers are producing implements of good quality at such prices as make it quite impossible for American makers to compete, and in many cases they do not hesitate to copy our designs. The German patent laws and the indifference of American manufacturers about protecting their goods in Germany are largely responsible for this condition.

This committee would be remiss in its duty if it failed to urge upon all the importance of protecting their patents in Germany, England, Russia and France, which compete with us in our lines of manufacture.

#### THE PHILIPPINE ISLANDS.

These islands now offer a new field to the American manufacturer and one well worthy of consideration by the members of this association. The laws of the Philippine Government, through the influence of American control, will be found very favorable to American goods, and it is the opinion of your committee that the future trade with the islands will prove very satisfactory if properly developed.

#### CUBA.

Under the very favorable present trade relations with Cuba a very large trade has been secured. The future of the island is very bright. The past year has been one of great prosperity. Crops have been large and prices good. The influx of American money and American settlers has already effected great changes, but care must be used in developing the trade and extending credits.

It is worthy of mention in this connection that the Cuban Government has lately recommended an extension of the present reciprocity relations with the United States, which have proven so effective in increasing our commerce with the island.

Great Britain has been endeavoring for some time to negotiate a treaty with Cuba. Late advices from Havana state that the Cuban Senate has declared emphatically against ratification. The principal reason given is that Cuba's commercial interests are too inseparably bound to her greatest customer, the United States, to permit granting for ten years such privileges to British warships and citizens as those named in the treaty.

Another reason given is that the adoption of the treaty would allow privileges to British warships as well as merchantmen not warranted by the relations between Cuba and Great Britain and not permissible in view of the relations between Cuba and the United States.

The latter reason is considered the most potent on account of the suspicion that the treaty, while ostensibly one of commerce, navigation and amity, would in reality give to British warships greater privileges in Cuban

ports than those given the United States by the cession of two naval stations.

#### ADAPTING GOODS TO FOREIGN REQUIREMENTS.

In dealing with this subject we must understand and consider national customs and character of animal or power they have with which to operate implements. When this point is reached prepare a careful description of every detail in the language of the buyer, sending clear illustrations. Do not copy old and antiquated implements or goods simply to be able to supply what they have already been buying. Dealers in all parts of the world look to the American manufacturer for something better than they have formerly had to accomplish the work. What you want to know is what the implement is intended to accomplish and be absolutely sure that it will do it.

#### QUOTING PRICES TO UNKNOWN PARTIES.

The indiscriminate quoting of prices to every foreign inquirer has caused some of the large importing firms to refuse to take up certain makes of goods on the ground that to meet competition would not leave any profit. Foreign houses look upon such methods as resembling those of catalogue houses. Do not quote prices to unknown parties. Write asking for further information as to wants, and in the meantime take steps to find out who the parties are and their standing.

#### SUBSTITUTION OF GOODS.

Former committees have touched upon this. We cannot, however, refrain from calling attention to the dissatisfaction which results from a course of this kind. Keep your customers fully advised by up to date literature of all changes and improvements you make, and, rather than substitute, cable, if necessary, whether the goods can be used with the changes or not.

Substituting on orders has been done so frequently that foreign buyers have made protests to our consuls, and many losses have been made by shippers, as parties would not receive the goods, and this has done much to create a feeling of distrust between the American manufacturer and foreign buyers.

#### PACKING GOODS.

This is an important matter. Your chairman has been greatly impressed by visits to warehouses of foreign buyers. So far as possible pack all parts to make a complete implement in one or more packages. Take extreme care against errors in packing or breakage in transportation and see that all goods sent abroad are of good quality, carefully made and shipped on time, and under no circumstances undertake to unload antiquated or poorly made goods or those of unproven adaptation.

We cannot help but feel that manufacturers will comprehend without further comment by this committee the injustice and consequent damage that will be incurred by carelessness as to quality of goods, inadaptation, correction of weak points, and the packing of goods in an irregular manner or different from the requirements.

#### EMBLEM.

To inspire confidence on the part of foreign buyers an emblem to show that you are a member in good standing of the National Association of Implement and Vehicle Manufacturers, with a further statement that you refer to said association, giving address, would, in the judgment of the committee, inspire confidence and be decidedly effectual.

#### BUREAU OF INFORMATION.

We are inclined to recommend the establishment of a bureau of information, subject to such regulations as the Executive Committee may prescribe. The duties of the bureau to be:

1. To secure by correspondence specific information as to what particular class of goods buyers are interested in, character of business, cable code, cable address, references, bankers, &c.
2. To investigate references.
3. To keep a tabulated record of all information received.
4. To supply all members, by bulletins or otherwise, the names of parties interested in the particular class of goods made by said members, together with such information as has been secured.

On the morning of October 2 a lively fire occurred in the Hardware store of Charles Welland, 147 Chambers street, New York. The blaze was confined to the third floor, used for storing House Furnishing Goods, but stock on floors above and below was somewhat damaged by smoke and water. Barring slight delay in filling orders for some lines, little inconvenience is expected to result from the fire. The loss is estimated at \$10,000.





### Different Lots of Similar Articles Manufactured at Various Times

It is necessary that the manager or superintendent give each lot an order number when order is first issued to factory. This order number, following goods through the various processes in the factory, has charged against it every item of labor performed upon it until its completion. For the purpose of comparing costs on same articles at different periods and manufactured under varying conditions its value is self evident and cannot be overestimated. Another recommendation for this plan is the fact that at time of taking inventory it is necessary only to verify the count of the uncompleted articles on these various order numbers. By totaling the costs of each job as recorded from day to day the value of same is given up to whatever stage of completion it may be in at that time, thus saving a great deal of pricing, guessing at prices and computation.

(To be continued.)

### TRADE WINNING METHODS.

*This department is for the description of approved methods of carrying on and extending business, and a cordial invitation is given to merchants to co-operate in the effort to make it suggestive and of practical use to the trade.*

### A QUESTION CONCERNING NONPROFIT BEARING GOODS.

To the Editor: I should like to learn through the columns of your valued paper the views of merchants regarding the necessity of selling nonprofit producing goods, or goods in which there is little profit, for the sake of holding trade. Also what goods are considered nonprofit bearing. The latter goods will probably vary in different sections of the country according to stocks and amount of competition.

PERPLEXED.

### AN ATTRACTIVE PAINT WINDOW.

WE are indebted for the accompanying illustration to C. L. Jenness, Dover, N. H., who adds several suggestive ideas regarding the use of the show window. While a great amount of time is not often spent in ar-



An Attractive Paint Window.

rangement, it is always his policy to keep his window looking attractive. With this in view, the glass is washed inside and out every time, the window is rearranged, and the shelf and wood work are kept looking bright and fresh. It is also recognized as better to command the attention of the passer-by with one line well displayed than to mix up an assortment of unrelated goods, which might altogether fail to create any definite impression on the mind. The benefits of a display are often materially increased by calling attention to it in the local paper. Seasonable goods are featured a little

before the season opens. For instance, this Paint window, which is especially interesting as evidence of a growing tendency in the Hardware trade, was arranged a little before the painting season. It thus puts people in mind of a possible need and perhaps induces them to call for a color card which they can conveniently study at home. This keeps the merchant's name and brand of Paint before the public, so that he will not have to displace an earlier and stronger impression when people are ready to buy.

### A TIMELY SHOWCARD.

THE accompanying design of showcard, as will be seen, has a double meaning, applying as it does in the first place to the late war between Russia and Japan,



Showcard for Show Window.

and last, but not least, to articles in general in japanned Hardware. To be used to advantage it should be placed in a window filled with all kinds of japanned goods, from a Clothes Line Hook to a Tin Lunch Book.

### Letters from the Trade.

Our readers are invited to discuss in these columns questions of trade interest connected with the manufacture or sale of Hardware. We shall be pleased to have a free expression of opinion on subjects deserving the attention of Hardware merchants and manufacturers.

### New Conditions Will Wipe Out Small business Man.

From an Iowa Machine Shop Proprietor: That catalogue house question is getting to be a chestnut. "Free trade" is natural trade, and people are going to buy where they can buy cheapest. There is not a mother's son of a Hardware dealer or any one else who will pay one cent more for his goods than he has to. The substance of the whole matter is that a great change is taking place in the commercial and political world, and what the final result will be no one can predict. One thing sure will happen and that is that the little business man will be wiped out completely.

### Jobbers Selling to Racket Stores, Lumber Dealers, Plumbers, &c.

From a Merchant in New York State: I notice in your issue of September 7 you comment editorially on a communication in the previous issue in regard to jobbers selling other people than regular Hardware dealers. Your correspondent is right. There is much more injury caused by the Hardware jobbers selling people that are not Hardware dealers than all the trouble caused by catalogue houses. Lumber dealers are in almost every town and they handle more or less Hardware, using the same to help sell their lumber, even selling at cost. Racket stores also sell Hardware as a leader, and are supplied by the jobbers; likewise plumbing shops, and, in fact, almost any who wish to buy from them.

The principal trouble from this source is that these parties sell the same goods as the retail Hardware dealer and he must compete with them. In almost all cases

this is entirely different from the competition of catalogue houses. If the Hardware jobbers are sincere in wishing to help the retail Hardware merchant let them confine themselves to the retail Hardware trade, and we will all have more faith in them.

## THE SECRETARIES' CONFERENCE AT ST. LOUIS.

THE result of the conference at St. Louis last week attended by the secretaries of numerous Hardware and other trade organizations, who had gathered in response to an invitation from T. James Fernley, as secretary of the Wholesale and Retail Hardware Joint Committee, was the formation of an association under the style of the Affiliated Presidents and Secretaries of Commercial and Trade Organizations. The officers of the new association are as follows:

**PRESIDENT**, Douglass Dallam, secretary of the National Wholesale Dry Goods Association, 43 Leonard street, New York.

**VICE-PRESIDENT**, William Judson, president of the National Wholesale Grocers' Association, Grand Rapids, Mich.

**SECRETARY-TREASURER**, T. James Fernley, secretary of the National Hardware Association, 505 Commerce street, Philadelphia, Pa.

An Executive Committee was also chosen, comprising M. L. Corey, secretary of the National Retail Hardware Association; J. D. Green, secretary of the New York State Stove Association; E. M. Clendenning, secretary of the Kansas City Commercial Club; Paul Blatchford, secretary of the Central Supply Association; and W. K. Jones, secretary of the National Retail Grocers' Association.

The following resolutions in regard to one-cent letter postage, parcels post and catalogue house competition were adopted:

### ONE-CENT LETTER POSTAGE.

We recommend that the various trade bodies and commercial associations throughout the country make strenuous efforts to induce Congress to enact a law providing for one-cent letter postage. It is proposed to take this subject up very vigorously through the new organization.

### PARCELS POST.

We believe a parcels post system is not in demand by a sufficient number of citizens to render it advisable for the Government to incorporate it in the postal service.

We believe it would be impracticable and enormously expensive. We therefore recommend that this association use its influence to prevent the inauguration of any such measure.

### CATALOGUE HOUSE COMPETITION.

Recognizing that there is a mutuality of interest between the manufacturers, jobbers and retailers, and that their co-operation is necessary in order to insure the perpetuation of the present established system of trade distribution, we indorse conditions that open business opportunities for the greatest number of individuals and distribute trade over the widest possible area, thus avoiding centralization of trade and its attendants of evil.

We believe that the future prosperity of the farm and factory is best served by encouraging this policy and shape our united efforts to this end.

We are advised that the new organization is hearing from a large number of association officials throughout the country, who are eligible for membership, all expressing an earnest desire to unite with it.

## J. C. McCARTY & CO.

J. C. McCARTY & CO., 10 Warren street, New York, have recently entered into an agency arrangement by which they control the output of Keen Edge Razor Strops, made by the Eddy Mfg. Company, Worcester, Mass., so far as the Hardware and kindred trades are concerned. The company manufactures a comprehensive line of Razor Strops in swing, cushion and combination cushion Strops with swing handles. The Strops are referred to as made from genuine horsehide from under side of flank and as treated by a process that softens the leather so as to afford a good grip of blade on Strop. The leather may be washed with soap and water without causing it to lose its softness or grip. The company also makes a large line of Razors, which J. C. McCarty & Co. likewise handle.

## YALE & TOWNE LOCKS AND HARDWARE CATALOGUE.

YALE & TOWNE MFG. COMPANY, 9-15 Murray street, New York, has just issued a compact abridgment of its 1000-page complete catalogue, which is designed for the especial use of any class of trade not usually interested in the more exclusive and expensive designs for contract work and imposing structures. The catalogue, No. 18, is bound in stiff covers and contains 207 pages, each 9¼ x 6 inches. The selections consist chiefly of leading and active goods of established popularity. In front are 28 pages of historical and descriptive matter, including a glossary of technical terms, the Yale Lock with illustrations, sketches of Linus Yale, Jr., inventor of the Yale Lock, and of the Yale & Towne Mfg. Company; illustrated Lock primer, a treatise on Lock picking, valuable matter on Master Keyed Locks, together with an illustrated chapter regarding the hand and bevel of Doors and a page on the care of Locks. The main portion of the book contains appropriate selections from extensive lines of Padlocks, Night Latches, Dead Locks, Builders' Hardware, Locks in sets, Keys and Blanks, Cabinet and Trunk Locks, Blount Door Checks, Chain Blocks and special products, any of which can be readily found by reference to the alphabetical or numerical indexes. The book is only sent on request, but without charge, express being prepaid by the company.

## TRADE ITEMS.

THE NETTLETON MFG. COMPANY, manufacturer of the Nettleton Reversible Cutting Nippers, has just begun operations at Middletown, Conn., in the factory formerly occupied by William Wilcox Mfg. Company. The company has been incorporated under the laws of Connecticut with a capital of \$5000. The officers are J. N. Nettleton, president, treasurer and general manager; T. T. Nettleton, vice-president, and F. S. Bacon, secretary.

FREDERICK PFEIFER, 101 Reade street, New York, manufacturer of the Johnston Pipe Wrench, has had prepared for gratuitous distribution an instructive hanger, 32 x 22½ inches, on which is a map of the world on Mercator's projection, showing among other things important steamship routes, and around the border the flags of all nations in *fac-simile* colors. Attention is also drawn to the Wrench, which is drop forged and warranted, that it never jams, and is both self adjusting and self releasing. Mr. Pfeifer, who is the Eastern representative of the Payson Mfg. Company, has recently been appointed agent of the Lawson Mfg. Company, Chicago, Ill., manufacturer of the Matchless Double Acting Floor Spring Hinge.

THE TROUT HARDWARE COMPANY, Chicago, has purchased the entire stock of the Indianapolis Hardware Company, Indianapolis, Ind., amounting to about \$20,000. This was a small jobbing business which was closed up some months ago. The Trout Company is intending to dispose of most if not all of the goods right in Indianapolis.

MAYER & Co., Philadelphia, Pa., manufacturers of Gold Medal Files, have established an agency with Beaudoin & Lapalme, 447 St. Paul street, Montreal, Canada, where a full stock of their Files will be carried for the Canadian trade.

THE establishment of the Knapp-Cramer Hardware Company, North Tonawanda, N. Y., was badly damaged by fire on the 21st ult., the loss being in the neighborhood of \$25,000, which is fully covered by insurance. As soon as the insurance is adjusted the business will be resumed on a larger scale than before.

C. F. Nutting has purchased from Myron H. Richardson a half interest in the firm of Lynch & Richardson, Littleton, N. H., and the new style will be Richardson & Nutting. The business of the former firm has shown a steady increase for a number of years. The new firm intends to increase its stock in nearly all departments.



Improvements in store and fixtures will also be made. The lines sold include Shelf and Heavy Hardware, Stoves and Tinware, Agricultural Implements and Athletic Goods.

### PRICE-LISTS, CIRCULARS, &c.

*Manufacturers in Hardware and related lines are requested to send us duplicate copies of catalogues, price-lists, &c., one copy for our catalogue department in New York and another for our London office; and at the same time to call our attention to any new goods or additions to their lines, of which appropriate mention will be made besides the brief reference to the catalogue or price-list in this column.*

THE A. H. GREEN COMPANY, 22 Park place, New York: Price-list of Interchangeable Shelf Boxes for the Hardware trade. The company also manufactures Locked Corner Wooden Packing Boxes, Wooden Boxes in Nests, Mailing and Optical Boxes, Packing Cases and Box Shooks.

THE A. A. WOOD & SONS COMPANY, Atlanta, Ga.: Illustrated pamphlet devoted to Hollow Augers, Fore Augers, Spoke Pointers and Gin Saw Filing Machine

HAVANA MFG. COMPANY, Havana, Ill.: Advance booklet illustrating and describing Gas and Gasoline Engines for general purposes.

B. F. AVERY & SONS, Louisville, Ky.: Export catalogue No. C-05, relating to Plows and Cultivating Implements, also domestic catalogue devoted to Plows and Implements for sugar and rice cultivation.

CHARLES J. GODFREY COMPANY, 4 Warren street, New York: Illustrated catalogue and price-list No. 3 of Firearms, Ammunition and General Sportsmen's Supplies.

BISSELL CHILLED PLOW WORKS, South Bend, Ind.: Catalogue No. 12, devoted to Walking and Sulky Plows, also Disk Plows.

KNAPP & SPENCER COMPANY, Sioux City, Iowa: A number of new insert pages for the company's loose leaf catalogue.

ST. LOUIS SHOVEL COMPANY plant of the Ames Shovel & Tool Company, St. Louis, Mo.: Catalogue and price-list No. 3 of Shovels, Spades, Scoops and Drain Tools. It satisfactorily represents an especially complete line of these goods.

BUTLER BROS., 495 Broadway, New York: "Our Drummer," with prices on a vast line of merchandise, including Hardware, which went into effect September 25 and are guaranteed during October, or until the November catalogue is out. The department "Retailers' Interchange" sparkles with practical suggestions as to ways and means of holding and winning trade.

GENEVA CUTLERY COMPANY, Geneva, N. Y., H. Berkele, 29 Murray street, New York, agent: Circular referring to Seneca Chief and other brands of Razors.

G. M. THURNAUER & BROTHER, 35 Park Place, New York: Catalogue containing 92 large plates illustrating and listing a large line of imported and domestic House-Furnishing Goods and Specialties.

J. W. FISKE IRON WORKS, 39 and 41 Park Place, New York: Large and complete catalogue of Iron Stable Fixtures, Hitching Posts, Weather Vanes, Window, Door and Transom Guards, Bracket Lamp, &c., with several full page plates of stable interiors.

W. A. BUSSE & CO., Chicago, Ill., H. Berkele, 29 Murray street, New York, agent: Catalogue of Busse patent upholstered adjustable Chair Seats.

JAMES H. FLAGG CUTLERY COMPANY, 29 Murray street, New York: Circulars referring to La Simplicité Safety Razors and novelties in imported silver handled Razors, Strops, &c.

E. BEMENT'S SONS, Lansing, Mich.: Illustrated price list No. 46, referring to Plows, Cultivators, Harrows and other Implements for farm and garden.

HANCOCK DISC PLOW COMPANY, Alton Ill.: Circulars referring to Hancock Disc Plows, made with one to four discs for horses and six to twelve discs for engines.

WATEROUS ENGINE WORKS COMPANY, St. Paul, Minn.: Catalogue illustrating fire department equipment, including Gasoline Fire Engines, Hose Carts, Hook and Ladder Trucks, Fire Belts, Ladders, Pike Poles, &c.

BARNEY & BERRY, Springfield, Mass.: Illustrated Skate catalogue of 56 pages for the season of 1905-1906. A new style of Hockey Skate is shown, also Skate Bags, both of full leather, with handle and cloth lined, and canvas, leather bound, cloth lined. A new telegraphic cipher code also occupies a place in the catalogue.

GENERAL ELECTRIC COMPANY, Schenectady, N. Y.: Illustrated folder devoted to Electric Flat Irons.

NEVERSLIP TIN COVER COMPANY, Watertown, N. Y.: Folder in the interest of the Gifford Improved galvanized steel plate Snow Shovel. The Shovels are made with and without lift handle. The lift handle can be raised or lowered at will, adapting the Shovel for light, heavy or deep snow; also for tall or short persons.

### REQUESTS FOR CATALOGUES, &c.

*The trade are given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.*

REQUESTS for catalogues, price-lists, quotations, &c., have been received from the following houses, with whom manufacturers may desire to communicate.

FROM SMITH HARDWARE COMPANY, Ensley, Ala., which handles Shelf Hardware, Tools, Cutlery, Sporting Goods, &c.

FROM P. P. PEARSON, Beatrice, Neb., who has recently purchased the Shelf and Heavy Hardware, Stove and Tinware, Sporting and Athletic Goods business of F. D. Kees.

FROM THE WESTERN HARDWARE COMPANY, Billings, Mont., which has lately been incorporated to conduct a retail business in Shelf and Heavy Hardware, Stoves and Tinware, Paints and Oils, Sporting and Athletic Goods.

FROM G. W. STIMITS, Grinnell, Kan., who desires catalogues and quotations on general Hardware, Paints, Harness, Sporting Goods, Furniture, &c.

FROM ALSTON GOWDY HARDWARE COMPANY, Fort Worth, Texas, which has been incorporated with capital stock of \$5000 and will conduct a retail business, carrying Shelf Hardware, Stoves and Tinware, Sporting and Athletic Goods.

FROM THE UNITED STATES LAND & TIMBER COMPANY, Portland, Ore. The company is in the market for a large quantity of Hardware to stock a store.

FROM THE CAWKER HARDWARE COMPANY, John Domino, proprietor, which has purchased the business of the Cawker City Hardware Company, Calker City, Kan., in Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Sporting and Athletic Goods.

FROM GEO. W. HOSIE & SON, Franklin, Mass., who carry a retail line of Shelf and Heavy Hardware, Agricultural Implements, Paints and Oils, Sporting and Athletic Goods, Automobiles, Phonographs and Records, as successors to Hosie Bros.

FROM STANDARD MACHINERY & SUPPLY COMPANY, 427-429 Mission street, San Francisco, Cal., agent and dealer in Machinery, Railway, Mine and Shop Supplies. The company is a recent organization.

FROM THE PITTSBURGH SHOVEL COMPANY, Leechburg, Pa., who solicit catalogues from manufacturers of Machinery, especially Wood Working Machinery and Machinery for Metal Stamping purposes.

FROM KLINKHART-ST. JOHN COMPANY, Canajoharie, N. Y., incorporated with a capital of \$15,000 to conduct a retail business in Shelf and Heavy Hardware, Stoves and Tinware, Agricultural Implements, Sporting and Athletic Goods, Cordage, Plumbers' Supplies and Roofing.

FROM HOBBS HARDWARE COMPANY, Raton, N. M., wholesale and retail dealer in Shelf and Heavy Hardware, Stoves and Tinware, Sporting and Athletic Goods, Plumbing, Heating and Steam Fitting Supplies.

FROM HENDRICKSON BROS., Lebanon, Kan., who have purchased the stock of R. Norgan, consisting of Shelf and Heavy Hardware, Stoves and Tinware, Agricultural Implements, Paints and Oils.

FROM J. P. RASMUSSEN, 1107 Commerce street, Tacoma, Wash., who has opened a store with a stock of Shelf Hardware, Steel Ranges, Heating Stoves and Enameled Ware.

FROM RICHARDSON & NUTTING, succeeding Lynch & Richardson, Littleton, N. H., in the retail Shelf and Heavy Hardware, Stove and Tinware, Agricultural Implement and Sporting Goods business.

FROM HEBREW & BONEBRAKE, formerly of Haddam, Kan., who have removed to Stockton, where they will handle Hardware, Stoves and Tinware, Paints and Oils, Sporting and Athletic Goods, Furniture, Wall Paper, Carpets and Window Shades.

FROM G. N. DOYLE, who has established a store at Greeley, Neb., for the sale of Shelf and Heavy Hardware, Stoves and Tinware, Agricultural Implements, Sporting and Athletic Goods.

FROM THE MOXEE HARDWARE COMPANY, North Yakima, Wash., succeeding the Loguet-Abeling Hardware Company and carrying Shelf and Heavy Hardware, Stoves and Tinware, Paints and Oils, Sporting Goods, Plumbing and Sheet Metal Work, &c.

FROM W. HAYNES, Hood River, Ore., who has succeeded Haynes & Co. in the Hardware, Stove, Paint and Sporting Goods business.

FROM C. E. HAAS, Le Mars, Iowa, successor to the wholesale and retail Hardware business of Haas & Huebsch.

FROM ALLEN & GILKERSON, Parsons, Kan., who has succeeded to the Hardware, Stove, Harness and Wagon business of Maher & Son.

## MISCELLANEOUS NOTES.

### Spoiled Wire for Hardware Trade.

Russell Fraser, 128-132 Wythe avenue, Brooklyn, N. Y., spools and cuts the various kinds of brass, copper, iron and steel wires, both in plain and tinned annealed, soft and spring brass and copper, carrying in stock 400 kinds of wire in sizes from No. 16 to No. 50, both regular and special. When spooled the wires have a weight of from  $\frac{1}{2}$  ounce to 15 pounds each in range. The various wires are also cut in straight lengths of 3 to 48 inches. He also covers for millinery and kindred trades iron and steel wires, soft annealed and hard, in numbers from 16 to 40, inclusive, supplying the latter kinds in coils, on spools or in straight lengths, any length up to 36 inches. A compartment box containing 147 spools of all salable sizes and kinds is put up for the hardware trade to be retailed at 5, 10 and 15 cents a spool at a large profit.

### Wooden Snow Shovels.

Rugg Mfg. Company, Greenfield, Mass., has just put on the market the following new patterns of wooden snow shovels: New Bay State, Steamboat and Competition. The company also manufactures other patterns of wooden and steel snow shovels.

## Atkins Perfect Saw Set and Vise.

E. C. Atkins & Co., Incorporated, Indianapolis, Ind., are offering a new saw set for hand saws, as shown in

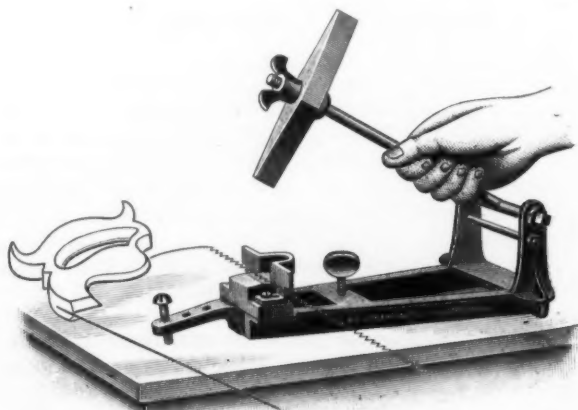


Fig. 1.—Atkins Set for Hand Saws.

Fig. 1. The device is so constructed that a uniform blow can be given to each tooth, thus insuring a perfectly even



Fig. 2.—Atkins Combined Saw Set and Vise.

set throughout the blade. It is explained that there is no danger of breaking the points of the most highly tem-

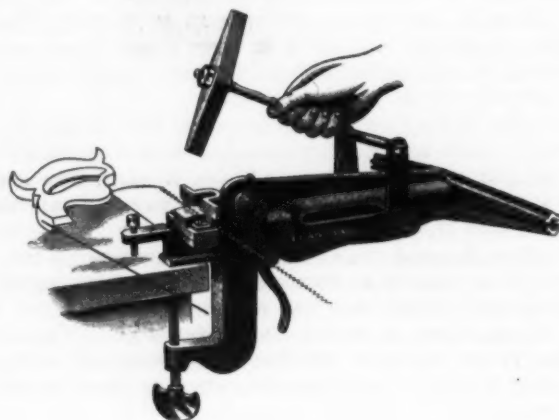


Fig. 3.—The Tool Adjusted as a Saw Set.

pered saw even when operated by a novice. It is adjustable to any amount of set desired and will set the finest as well as the coarsest tooth perfectly. In Figs. 2 and 3 is illustrated the combined perfect saw set and



vise. This is a combination which can be instantly adjusted to the different operations. The filing clamp ready for use is shown in Fig. 2. The jaws are rubber cushioned and practically noiseless. The clamp can be tilted to any desired angle and works on the lock lever principle. It can be fastened to a bench with a malleable iron screw clamp. The same tool adjusted for use as a saw set is shown in Fig. 3.

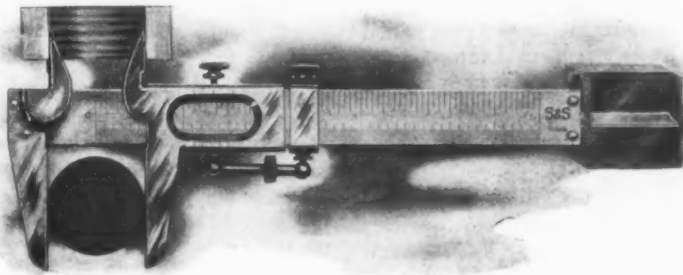
### Steel Wire Scratch Brushes.

The Osborn Mfg. Company, Cleveland, Ohio, is placing on the market an assortment of fine steel wire scratch brushes designed primarily for painters' use in removing paint, varnish, &c., from wood and metal and for clean-



Assorted Box of Steel Wire Scratch Brushes.

ing cut stone work. They are also used for various other scouring purposes. The assortment consists of a limited number of the several styles best adapted for this class



S. & S. Vernier Caliper and Depth Gauge.

of work. Some of the brushes have plain flat blocks similar to the ordinary scrubbing brush, some have handles same style as a furniture rubber and still others have upright handles. The assortment also includes a few of what are known as Painters' Friend steel wire scratch brushes. These brushes are especially designed for cleaning hard wood floors, &c., being made with curved backs and of fine round wire. The design has been to have a brush of the right size and shape to meet every requirement. The accompanying cut illustrates one of the assortment boxes, which are of wood, neatly finished with hinged cover and attractive display card printed in two colors. They are made of proper size for counters or showcases and afford a means of displaying the brushes to best advantage. These goods are referred to as a very profitable side line for hardware merchants handling mixed paints, varnish &c.

### Aluminum Plasterers' Hocks.

Herbert Story, 23 Duane street, New York, handling complete lines of masons', plasterers', sidewalk and plumbers' tools, is manufacturing an aluminum plasterer's hock with both adjustable and rigid handles, the former of which is here shown. The principal advantage of this construction is the absolutely even top surface and light weight, weighing complete but 27 ounces. The mortar carrying surface is 13 inches square and is made of 5-64-inch aluminum sheet, having a white wood or birch handle  $1\frac{1}{4}$  x 5 inches. The adjustable

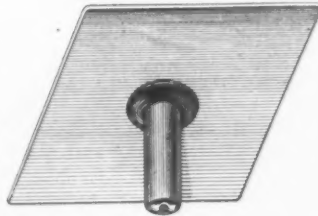


Fig. 1.—Aluminum Plasterers' Hock, Adjustable Handle.

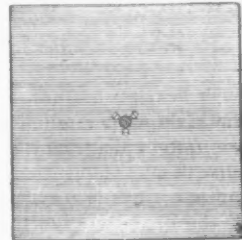


Fig. 2.—Flush Top Surface.

handle hock, which is a great convenience when stowing in tool kit to carry, is reinforced on under side of aluminum plate with iron 1 inch square by  $\frac{1}{4}$  inch thick and held securely by means of three brass rivets. Through the handle passes a 3-16-inch threaded rod which screws into the iron plate, there being an iron pin on the inner end of handle which keeps handle from turning when in use. Between handle and aluminum plate is a circular rubber hand protector 4 x  $\frac{1}{4}$  inch. The rigid handle hock is made on much the same principle, except that the handle is held in place by an iron rod riveted at end of handle over a stout iron washer.

### S. & S. Vernier Caliper.

Schuchardt & Schütte, 136 Liberty street, New York, offer the S. & S. vernier caliper shown in the accompanying illustration, which also demonstrates the method of ascertaining accurately inside and outside diameters and depths. They are made in full polished, with and without horizontal adjust-

ing screw and in the same styles in full nickel plate. The instrument is  $6\frac{1}{2}$  inches long over all, closed, the end depth gauge having a capacity of 3 13-16 inches. The style illustrated is graduated in sixteenths and fiftieths of an inch, the vernier attachment enabling the user to get positive measurements to the thousandth of an inch. Similar calipers are also furnished with graduations and verniers for readings to 1-128 inch and 1-10 mm., metric measure. There can be no confusion in determining results, as all three styles of gauges are read from similar scales and verniers. For carrying, leather pockets with metallic snap buttons are furnished. The four tools list but \$2.25, \$2.55, \$2.90 and \$3.15 each, according to finish and whether or not they have the adjusting screw; subject to trade discounts. This caliper can also be obtained at any of the concern's houses in Berlin, London, Vienna, Stockholm and St. Petersburg.

### Canadian Hockey Skate.

Barney & Berry, Springfield, Mass., have just marketed the Canadian hockey skate here shown. It is made only in best, or Grade 3, highly polished and nickeled and for screwing permanently to sole and heel. All heel and toe plate rivets are countersunk, making a perfectly



Canadian Hockey Skate.

flush bearing surface. A special feature of the skate is the style of post supporting heel and sole plates, which not only enhances the appearance but dispenses with superfluous metal, thereby diminishing weight and leaving less surface for ice and snow to cling to. Each end of the blade is slightly tapered vertically and the upper portions are beveled, while the entire blade is warranted of fine temper. This skate can be supplied in seven sizes, from 9 to 12 inches, inclusive, increasing by half inches.

### The Milbradt Adjustable Rolling Ladder Platform.

The accompanying cuts illustrate the Milbradt adjustable rolling ladder platform, made by the Ebbing Mfg. Company, St. Louis, Mo. Fig. 1 shows the platform separately and Fig. 2 shows it in position attached to a

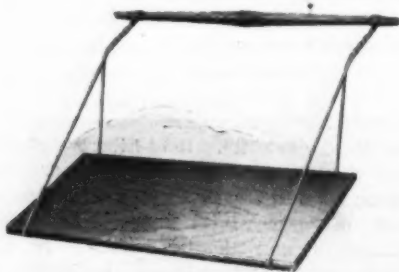


Fig. 1.—Milbradt Adjustable Rolling Ladder Platform.

rolling ladder. It is made of solid oak, with nickel plated hangers, and weighs about 5 pounds. It is intended for use when putting up, taking down or rearranging stock



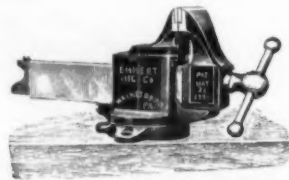
Fig. 2.—Milbradt Platform Attached to Rolling Ladder.

and affords a safe and convenient place to stand, allowing free use of both hands to work with. The platform can be instantly attached at any height, raised or lowered at pleasure or detached entirely and put away. While designed especially for the Milbradt rolling step ladders,

it can be used on any make of rolling ladder, and the manufacturer is offering it separately for this purpose. When ordering it is necessary to state the make of ladder to be fitted or in the case of special ladders to give the width between the sides and also the width of the sides and steps.

### Swivel Bottom Self Adjusting Coach Makers' Vise.

Emmert Mfg. Company, Waynesboro, Pa., is offering the Presto quick acting, self adjusting jaw coach makers' vise shown herewith. It has a swivel bottom, 4½-inch



Swivel Bottom Self Adjusting Coach Makers' Vise.

jaws and opens 9 inches. It weighs 68 pounds. The same vise is made with stationary bottom, weighing 62 pounds.

### Farny Razor and Guard.

F. A. Reichardt & Co., 391 Broadway, New York, have just put on the market the 1905 model Farny razor and razor guard here illustrated. Fig. 1 represents the razor with guard partly on, Fig. 2 being an opposite view



Fig. 1.—Farny Razor, Model 1905, and Guard.

of the guard, actual size. The razor is made from the finest Swedish steel, double concaved and extra hollow ground, with serrated shank surfaces, top and bottom, to afford a good grip. The guard, of nickeled German silver, is made exactly to fit this razor, so that no adjusting skill is required other than to mechanically slip it on the blade in either of two ways, for right or left

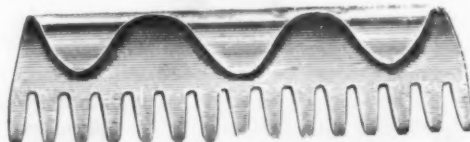


Fig. 2.—Farny Safety Razor Guard.

shaving. A similar razor is made in 1904 model for use without guard, 3 inches long and ¾ inch wide, but the new model is but 2½ inches by ¾ inch, for the reason, the manufacturers say, that the human face is so curved that on no part of it can all of the cutting edge of a razor be used at one time; hence the shorter blade.

The Frank Colladay Hardware Company, wholesale Hardware, Hutchinson, Kan., is drawing plans for a new building which will have a frontage of 70 feet and a depth of 127 feet. It will be four stories and basement. The building will be modernly equipped.



### Ansley H. Fox Double Barreled Hammerless Shotgun.

We illustrate herewith a new double barreled, hammerless shotgun, known as Grade C, just being placed on the market by the A. H. Fox Gun Company, Philadelphia, Pa. The barrels of the gun are made of genuine Krupp or Whitworth fluid steel, tested before importation and again subjected to repeated tests during the course of making as well as after the completion of the gun. The

thus forming a very strong and rigid truss. The skates are ball bearing and furnished with either hemacite or steel rollers, as desired. Another point that appeals to users is the ease with which these skates can be taken off, no key being required. It is reported that there are now many roller skating rinks in operation, particularly through New England, while the Middle West and the Southern States are also taking up the sport very rapidly. The line here referred to was expressly designed for rink use and the manufacturer expects that there will be a



*Ansley H. Fox Double Barreled Hammerless Shotgun.*

mechanism of the gun is extremely simple; all the working parts are tool steel forgings, finely finished and polished. The barrels are securely locked to the frame by a rotary bolt through the extension rib, the bolt being tapered so as to take up the wear in all directions and keep the gun tight at all times. Spiral springs operate the hammers and the top levers, and the manufacturer guarantees these against breakage. Friction is minimized in all the working parts, and the gun cocks very easily, the weight of the barrels alone being sufficient to cock the hammers. The frame is a steel drop forging, compact and light, yet sufficiently strong to enable a 12-gauge gun to be made as light as 6¼ pounds and with perfect balance. All the working parts of this gun are interchangeable, having been made accurately to gauges. The stocks are of imported English or Circassian walnut, thoroughly seasoned and carefully selected for quality, direction of grain and fineness of figure. These particular guns the above company announces are being especially offered to meet the demand for a domestic gun of superior quality. No effort has been spared in workmanship, the factory being fully equipped with the necessary tools and machinery for accurate and efficient production of the guns, which will be offered the trade in five grades, A, B, C, D and F, varying in finish.

### Union Hardware Company's New Roller Skate.

The Union Hardware Company, Torrington, Conn., is offering to the trade its No. 15 roller skate, as shown



*Union Hardware Company's New Roller Skate.*

herewith. It is made entirely of cold rolled steel, which gives a handsome appearance to the finished article. Special attention is called to the construction of the frame, which is of unusual strength, the rib underneath being riveted to the plate, extending its entire length,

good sale for it in the many towns and cities where rinks are operated.

### Combination Oil Stone Boxes.

The Pike Mfg. Company, Pike, N. H., is now offering to the trade combination oil stone boxes, as shown in the accompanying illustrations. Skilled workmen agree that at least two oil stones of different grits are a necessity, and it is likewise recognized that the efficiency of a stone is greatly increased if it is kept clean and moistened with oil. In these boxes the stones rest on felt strips forming an oil



*The Mechanics' Delight.*



*'The Pride o' the Shop.*

*Combination Oil Stone Boxes.*

reservoir in the bottom of each box, while the covers are lined with felt to absorb any surplus oil and keep the stone surfaces fresh and clean. The boxes are constructed of full weight prime tin plate, enameled, and fitted with brass springs to hold the oil stones firmly in place when the boxes are closed and carried about in a tool chest. The Mechanics' Delight box is 13 inches long by 2½ inches wide, having room for one 7-inch and one 5-inch stone, set end to end. The Pride o' the Shop is 8¾ inches by 4½ inches, having room for two 7-inch stones side by side, with a compartment at one end for a pocket oiler filled with Pike's Stonoil, which is referred to as a very efficient oil for oil stones, razor hones, and all kinds of tools, &c. Boxes may be ordered with any combination of bench stones desired.

## Wilcox-Neville Combination Hay and Stock Rack Bracket.

In Fig. 1 of the accompanying cuts is shown a combination hay and stock rack bracket, put on the market by Wilcox Mfg. Company, Aurora, Ill. In Fig. 2 is shown



Fig. 1.—Wilcox-Neville Combination Hay and Stock Rack Bracket.

a hay rack, upon which the brackets are used, making it easy to assemble in sections and convenient to take down, without having to lift the complete rack. The hay rack can be instantly changed to the stock rack, Fig. 3, by

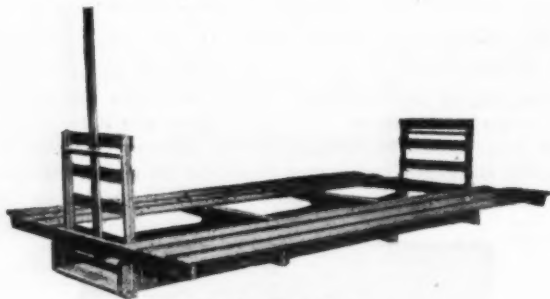


Fig. 2.—Hay Rack.

raising the sides against the end ladders. These are made full width of the bed and 38 inches in height, thus serving as end gates for the stock rack. The brackets are made in one size to meet all requirements, and so that the body of the rack can be put together without

boring and weakening stiles. A set of bracket fixtures consists of eight malleable iron brackets, sixteen 10½ x ¾ inch bolts, and eight 3 x ¾ inch flat head stove bolts. One

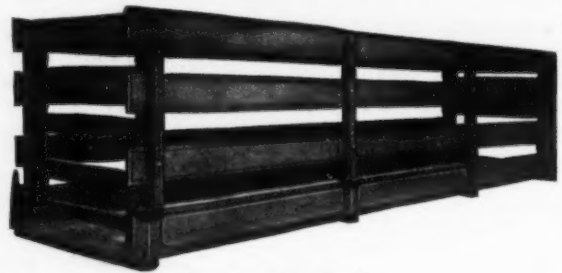


Fig. 3.—Stock Rack.

set complete is packed in a box, and the weight of complete set is 32 pounds.

## The Nettleton Reversible Nipper.

The Nettleton Mfg. Company, Middletown, Conn., is just offering for sale the new nipper with reversible and adjustable cutters shown herewith. These nippers are made of malleable iron in five sizes, running from 8 to 14 inches. The cutters with which they are fitted are made of special cutter steel of high grade. Each blade has two cutting edges, which, by the use of special machinery in the construction, are made so that they can be reversed



The Nettleton Reversible Nipper.

when the edges are worn and will be found true no matter how placed. Double backing for the cutters is afforded by the construction of the head, and as the corners are square it is claimed that there is no chance for play or for the edges to spring out, each blade being held in place by two screws. The manufacturers also state that there is no danger of abusing these nippers, since they are carefully adjusted with regard to the leverage to be exerted and the size of stock that each tool is designed to cut.

## PAINTS, OILS AND COLORS

### Animal, Fish and Vegetable Oils—

Linseed, City, raw.....	54	@55
Linseed, City, boiled.....	56	@57
Linseed, State and West'n, raw.....	44	@52
Linseed, raw Calcutta seed.....	62	@62
Lard, Extra Prime, Winter.....	61	@62
Lard, Extra No. 1.....	47	@60
Lard, No. 1.....	37	@62
Cotton-seed, Crude, f.o.b. mills.....	29	@59½
Cotton-seed, Summer Yellow.....	30½	@59½
Prime.....	30½	@59½
Cotton-seed, Summer Yellow.....	30½	@59½
off grades.....	@..	@..
Sperm, Crude.....	55	@..
Sperm, Natural Spring.....	62	@..
Sperm, Bleached Spring.....	62	@..
Sperm, Natural Winter.....	62	@63
Sperm, Bleached Winter.....	62	@63
Tallow, Prime.....	51	@63
Whale, Crude.....	42	@..
Whale, Natural Winter.....	42	@44
Whale, Bleached Winter.....	42	@46
Menhaden, Brown, Strained.....	27	@28
Menhaden, Light, Strained.....	28	@29
Menhaden, Bleached, Winter.....	30	@31
Menhaden, Ex. Bld., Winter.....	31	@32
Menhaden, Southern.....	16	@16½
Cocanut, Ceylon.....	7	@6½
Cocanut, Cochon.....	7½	@7½
Cod, Domestic, Prime.....	34	@36
Cod, Newfoundland.....	39	@41
Red, Elaine.....	35	@36
Red, Saponified.....	45	@45½
Olive, Italian, bbls.....	55	@60
Neatsfoot, prime.....	49	@50
Palm, Logos.....	6	@..

### Mineral Oils—

Black, 29 gravity, 25¢ cold test.....	10½	@11½
Black, 29 gravity, 15 cold test.....	11½	@12½
Black, Summer.....	10½	@11½
Cylinder, light filtered.....	18	@19
Cylinder, dark filtered.....	16	@17
Paraffine, 80-90 gravity.....	12½	@13
Paraffine, 90-95 gravity.....	11½	@12
Paraffine, 88 gravity.....	9½	@9½
Paraffine, Red.....	11½	@13
In small lots ½¢ advance.		

### Miscellaneous—

Barytes, White, Foreign.....	ton	\$17.50@19.00
Barytes, Amer. floated.....	ton	18.00@19.00
Barytes, Crude, No. 1.....	ton	10.00@11.00
Chalk, in bulk.....	ton	3.00@3.25
China Clay, English.....	100 lb	35
Cobalt, Oxide.....	100 lb	2.50@2.60
Whiting, Common.....	100 lb	43¢
Whiting, Gilders.....	100 lb	50¢
Whiting, Ex. Gilders.....	100 lb	55¢

### Putty, Commercial—

In bladders.....	\$1.65	@1.85
In bbls. or tubes.....	1.15	@1.35
In 1 lb to 5 lb cans.....	2.60	@2.90
In 12½ to 50 lb cans.....	1.45	@1.85

### Spirits Turpentine—

In Oil bbls.....	68½	@69
In machine bbls.....	69	@69½

### Glue—

Cabinet.....	11	@15
Common Bone.....	7	@9
Extra White.....	18	@24
Foot Stock, White.....	11	@14
Foot Stock, Brown.....	8	@11
German Hide.....	12	@18
French.....	10	@16
Irish.....	13	@16
Low Grade.....	9	@12
Medium White.....	14	@17

### Gum Shellac—

Bleached Commercial.....	37	@38
Bone Dried.....	47	@48
Button.....	36	@45
Diamond I.....	45	@55
Pine Orange.....	45	@47
A. C. Garnet.....	44	@44
D. C.....	60	@60
Octagon B.....	42	@52
T. N.....	41	@43
V. S. O.....	58	@..

### Colors in Oil—

Black, Lampblack.....	12	@14
Blue, Chinese.....	35	@46
Blue, Prussian.....	32	@36

### White Lead, Zinc, &c.—

Lead, English white, in Oil.....	9½	@9½
Lead, American white, in Oil.....	9½	@9½
Lots of 500 lb or over.....	@ 6½	
Lots less than 500 lb.....	@ 7	
In Barrels.....	@ 6	
Lead, White, in oil, 25 lb tin.....	@ 1	
Lead, White, in oil, 12½ lb tin.....	@ 1	
Lead, White, in oil, 1 to 5 lb.....	@ 1½	
Lead, American, Terms: For lots 12 tons and over ¼¢ rebate; and 2¢ for cash if paid in 15 days from date of invoice; for lots of 500 lbs. and over 2¢ for cash if paid in 15 days from date of invoice, for lots of less than 500 lbs. net.....	@ 6	
Lead, White, Dry in bbls.....	@ 6	
Zinc, American, dry.....	4½	@4½
Zinc, French.....	5½	@5½
Paris, Red Seal, dry.....	5½	@5½
Paris, Green Seal, dry.....	5½	@5½
Antwerp, Red Seal, dry.....	5½	@5½
Zinc, V. M. French, in Poppy Oil.....	12	@12½
Green Seal.....	12	@12½
Lots of 1 ton and over.....	12	@12½
Lots of less than 1 ton.....	12½	@12½
Zinc, V. M. French, in Poppy Oil.....	12	@12½
Red Seal.....	12	@12½
Lots of 1 ton and over.....	10½	@11½
Lots of less than 1 ton.....	11	@11½
Discounts.—French Zinc.—Discounts to buyers of 10 bbl. lots of one or more grades, 1%; 20 bbls., 2%; 50 bbls., 4%.		

### Dry Colors—

Black, Carbon.....	5	@10
Black, Drop, Amer.....	4	@6
Black, Drop, Eng.....	5	@15

Black, Ivory.....	16	@20
Lamp, Com.....	4½	@6
Blue, Celestial.....	4	@6
Blue, Chinese.....	29	@32
Blue, Prussian.....	27	@30
Blue, Ultramarine.....	4½	@15
Brown, Spanish.....	½	@1
Carmine, No. 40.....	33.50	@3.60
Green, Chrome, ordinary.....	3½	@6
Green, Chrome, pure.....	17	@25
Lead, Red, bbls, ½ bbls. and kegs.....	@ 6½	
Lots 500 lb or over.....	@ 6½	
Lots less than 500 lb.....	@ 7	
Litharge, American, bbls.....	6	@6½
Ocher, American.....	ton	\$8.50@16.00
Ocher, American Golden.....	2½	@3½
Ocher, French.....	1½	@2½
Ocher, Foreign Golden.....	3	@4
Orange Mineral, English.....	8	@10
Orange Mineral, French.....	10½	@12½
Orange Mineral, German.....	8	@10
Orange Mineral, American.....	8½	@8½
Red, Indian, English.....	4½	@8½
Red, Indian, American.....	3	@3½
Red, Turkey, English.....	4	@10
Red, Tuscan, English.....	7	@10
Red, Venetian, Amer.....	100 lb	\$0.50@1.25
Red Venetian, English.....	100 lb	\$1.15@1.75
Sienna, Italian, Burnt and.....	3	@9½
Powdered.....	1½	@2
Sienna, Ital., Raw.....	3	@9½
Sienna, American, Raw.....	1½	@2
Sienna, American, Burnt and.....	1½	@2
Powdered.....	1½	@2
Talc, French.....	ton	\$15.00@30.00
Talc, American.....	ton	\$15.00@25.00
Terra Alba, French.....	100 lb	\$0.90 @1.00
Terra Alba, English.....	100 lb	\$0.90 @1.00
Terra Alba, American.....	100 lb	\$0.90 @1.00
Th. No. 1.....	60	@70
Terra Alba, American.....	100 lb	\$0.90 @1.00
Th. No. 2.....	45	@50
Umber, Turkey, Bnt. & Pow.....	2½	@3½
Umber, Turkey, Raw & Pow.....	2½	@3½
Umber, Burnt, Amer.....	1½	@2
Umber, Raw, Amer.....	1½	@2
Yellow, Chrome.....	11	@14
Vermilion, American Lead.....	10	@25
Vermilion, Quicksilver, bulk.....	@65	
Vermilion, Quicksilver, bags.....	@65	
Vermilion, English, Import.....	75	@80
Vermilion, Chinese.....	\$0.90	@1.00



# Current Hardware Prices.

**General Goods.**—In the following quotations General Goods—that is, those which are made by more than one manufacturer—are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

**Special Goods.**—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

**Range of Prices.**—A range of prices is indicated by means of the symbol @. Thus 33 1/2 @ 33 1/2 & 10% signifies

that the price of the goods in question ranges from 33 1/2 per cent. discount to 33 1/2 and 10 per cent. discount.

**Names of Manufacturers.**—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued May, 1905, which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

**Standard Lists.**—A new edition of "Standard Hardware Lists" has been issued and contains the list prices of many leading goods.

**Additions and Corrections.**—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

## Adjusters, Blind—

Domestic,  $\frac{1}{2}$  doz. \$3.00.....33 1/2%  
North's.....10%  
Zimmerman's—See Fasteners, Blind.

## Winders, Blind—

Ives' Patent.....35%  
Taplin's Perfection.....35%

**Ammunition**—See Caps, Cartridges, Shells, &c.

**Anvils—American**—  
Eagle Anvils..... $\frac{1}{2}$  doz. \$7.00  
Hay-Budden, Wrought..... $\frac{1}{2}$  doz. \$9.00  
Horseshoe brand, Wrought..... $\frac{1}{2}$  doz. \$9.00  
Trenton..... $\frac{1}{2}$  doz. \$9.00

## Imported—

Peter Wright & Sons..... $\frac{1}{2}$  doz. \$10.00  
Anvil, Vise and Drill—  
Millers Falls Co., \$18.00.....15%  
10%  
Apple Parers—See Parers, Apple, &c.

**Aprons, Blacksmiths'—**  
Livingston Nail Co.....33 1/2%

**Augers and Bits—**  
Com. Double Spur.....75@75@5%  
Jennings' Patn., reg. Finish.....50@10@60%

Black Lip or Blued.....60@10%  
Boring Mach. Augers.....70@10%  
Car Bits, 12-in. twist.....50@10%  
Ford's Auger and Car Bits.....40@5%  
Forster Pat. Auger Bits.....25%

C. E. Jennings & Co.:  
No. 10 ext. tip, R. Jennings' list.....25%  
No. 30, R. Jennings' list.....40@75%  
Russell Jennings' list.....25@10@25%

L'Hommedieu Car Bits.....15%  
Mayhew's Countersink Bits.....45%  
Millers Falls.....50@10@75%  
Ohio Tool Co.'s Bailey Auger and Car Bits.....10@10%

Pugh's Black.....20%  
Pugh's Jennings' Pattern.....35%  
Snell's Auger Bits.....60%  
Snell's Bell Hangers' Bits.....60%  
Snell's Car Bits, 12-in. twist.....60@10%  
Wright's Jennings' Bits.....50%

**Bit Stock Drills—**  
See Drills, Twist.

**Expansive Bits—**  
Clark's small, \$18; large, \$25.....50@10%  
Clark's Pattern, No. 1,  $\frac{1}{2}$  doz. \$25.....No. 2, \$18

Ford's, Clark's Pattern.....60@5%  
C. E. Jennings & Co., Steer's Pat. 25%  
Swan's.....60%

**Gimlet Bits—**  
Common Dble. Cut.....\$3.00@3.25  
German Pattern, Nos. 1 to 10, \$1.60; 11 to 13, \$5.75

**Hollow Augers—**  
Bonney Pat., per doz. \$5.50@6.00  
Ames.....25@10%  
Universal.....20%  
Wood's Universal.....25%

**Ship Augers and Bits—**  
Ford's.....33 1/2@5%  
C. E. Jennings & Co.:  
L'Hommedieu's.....15%  
Watrous.....35@5%  
Ohio Tool Co.'s.....40%  
Snell's.....40%

**Awl Hafts—See Hafts, Axl.**

**Awls—**  
Brad Awls:  
Handled.....gro. \$2.75@3.00  
Unhlded, Shldered.....gro. \$3.00@3.25  
Unhanded, Patent.....gro. \$3.00@3.25

Peg Awls:  
Unhanded, Patent.....gro. \$1.00@1.25  
Unhlded, Shldered.....gro. \$1.00@1.25

Scratch Awls:  
Handled, Com.....gro. \$3.50@4.00  
Handled, Socket.....gro. \$11.50@12.00  
Hurwood.....40%

**Awl and Tool Sets—See Sets, Awl and Tool.**

**Axes—**  
Single Bit, base weights:  
First Quality.....\$6.75  
Second Quality.....\$6.25

Double Bit, base weights:  
First Quality.....\$8.75  
Second Quality.....\$8.25

**Axle Grease—**  
See Grease, Axle

**Axles—**  
Iron or Steel  
Concord, Loose Collar.....1 1/2@1 1/2%  
Concord, Solid Collar.....1 1/2@1 1/2%

No. 1 Common, Loose.....3 1/2@3 1/2%  
No. 1 1/2 Com., New Style.....3 1/2@3 1/2%  
No. 2 Solid Collar.....4 1/2@4 1/2%

**Half Patent:**  
Nos. 7, 8, 11 and 12.....75@75@5%  
Nos. 13 to 14.....70@10@75@5%  
Nos. 15 to 18.....75@10@75@10@5%  
Nos. 19 to 22.....75@10@75@10@5%

**Boxes, Axle—**  
Common and Concord, not turned  
lb. 1 1/2@5%  
Common and Concord, turned,  
lb. 5 1/2@6%  
Half Patent.....lb. 8 1/2@9%

**Bait—**  
Hendryx:  
A Bait.....25%  
B Bait.....25%  
Competitor Bait.....25%

**Balances—**  
Caldwell new list.....50%  
Pullman.....50@10@60%

**Spring—**  
Spring Balances.....50@10@60%  
Chattillon's:  
Light Spg. Balances.....40@10%  
Straight Balances.....40%  
Circular Balances.....50%  
Large Dial.....30%

**Barb Wire—See Wire, Barb.**

**Bars—**  
Steel Crowbars, 10 to 40 lb. per lb. 2 1/2@3 1/2%

**Towel—**  
No. 10 Ideal, Nickel Plate..... $\frac{1}{2}$  gro. \$8.50

**Beams, Scale—**  
Scale Beams.....40@10@50%  
Chattillon's No. 1.....30%  
Chattillon's No. 2.....40%

**Beaters, Carpet—**  
Holt-Lyon Co.:  
No. 12 Wire Coppered  $\frac{1}{2}$  doz. \$0.85; Tinned.....\$1.00  
No. 11 Wire Coppered  $\frac{1}{2}$  doz. \$1.10; Tinned.....\$1.20  
No. 10 Wire Galvanized..... $\frac{1}{2}$  doz. \$1.75

Western W. G. Co.:  
No. 1 Electric..... $\frac{1}{2}$  gro. \$7.50  
No. 2 Buffalo..... $\frac{1}{2}$  gro. \$9.00  
No. 3 Perfection Dust..... $\frac{1}{2}$  gro. \$9.00

**Egg—**  
Holt-Lyon Co.:  
Holt, No. A, Janned..... $\frac{1}{2}$  doz. \$1.20  
Holt, No. 1, Tinned..... $\frac{1}{2}$  doz. \$1.50  
Holt, No. B, Janned..... $\frac{1}{2}$  doz. \$2.00  
Holt, No. 2, Tinned..... $\frac{1}{2}$  doz. \$2.25  
Lyon, No. 2, Janned..... $\frac{1}{2}$  doz. \$1.25  
Lyon, No. 3, Janned..... $\frac{1}{2}$  doz. \$1.50

Taplin Mfg. Co.:  
No. 60 Improved Dover.....\$6.00  
No. 75 Improved Dover.....\$7.00  
No. 100 Improved Dover.....\$7.00  
No. 102 Improved Dover, Tin'd.....\$8.50  
No. 150 Improved Dover, Hotel.....\$15.00  
No. 152 Imp'd Dover, Hotel, T'd.....\$17.00  
No. 300 Imp'd Dover Tumbler.....\$8.50  
No. 202 Imp'd Dover Tumbler, T'd.....\$9.50  
No. 300 Imp'd Dover Mammoth,  $\frac{1}{2}$  doz.....\$25.00  
Western W. G. Co., Buffalo.....\$7.00  
Wonder (S. S. & Co.),  $\frac{1}{2}$  gro. net, \$6.00

**Bellows—**  
Blacksmith, Standard List.....60@10@70@10%

**Hand—**  
Inch.....6 7 8 9 10  
Doe.....\$4.75 5.70 6.65 7.60 8.85

**Molders—**  
Inch.....9 10 11 12 14  
Doe.....\$8.00 9.00 10.50 12.50 14.50

**Bells—**  
Ordinary goods.....75@5@75@10@45%  
High grade.....70@10@70@10@45%  
Jersey.....75@10%  
Texas Star.....50%

**Door—**  
Abbe's Gong.....45%  
Burton Gong.....50%  
Home, R. & E. Mfg. Co.'s.....55@10%  
Lever and Pull, Sargent's.....60@10@10%  
Trip Gong.....50@10@50@10@5%  
Yankee Gong.....55%

**Hand—**  
Hand Bells, Polished, Brass.....60@5@60@10%

**White Metal—**  
Nickel Plated.....50@10@50@10@5%  
Scales.....60@10@75@10%  
Cone's Globe Hand Bells.....33 1/2@35%  
Silver Chime.....33 1/2@35%

## Miscellaneous—

Farm Bells.....lb. 2 1/2@  
Steel Alloy Church and School

American Tube & Stamping Co.  
Gongs.....75%  
Table Call Bells.....50@50@10%

**Belting—**  
Extra Heavy, Short Lap.....60@5%  
Regular Short Lap.....60@10@5%  
Standard.....70%  
Light Standard.....70@5%  
Cut Leather Lacing.....60%  
Leather Lacing Sides, per sq. ft. 22¢

**Rubber—**  
Agricultural (Low Grade).....75@75@5%  
Common Standard.....70@70@10%  
Standard.....60@5@10%  
Extra.....60@10@5%  
High Grade.....50@5@10@10%

**Bench Stops—**  
See Stops, Bench

**Benders and Upsetters, Tire—**  
Detroit Perfected Tire Bender.....40%  
Green River Tire Benders and Upsetters.....20%  
Detroit Stoddard's Lightning Tire Upsetters, No. 1, \$1.25; No. 2, \$1.25; No. 3, \$10.50; No. 4, \$16.25; No. 5, \$20.50

**Bicycle Goods—**  
John S. Leng's Son's 1902 list:  
Chain.....50%  
Parts.....50%  
Spokes.....50%  
Tubes.....60%

**Bits—**  
Auger, Gimlet, Bit Stock Drills, &c.—See Augers and Bits.

**Blocks—**  
Common Wooden.....70@10@75%  
Hartz St. Tackle Blocks.....50@50@5%  
Hollow Steel Blocks, with Ford's Patent Slaves.....50@10%  
Lane's Patent Automatic Lock and Junior.....30%  
Stowell's Novelty, Mal. Iron.....50@10%  
Stowell's Self Loading.....60%  
See also Machines, Hoisting.

**Boards, Stone—**  
Zinc, Crystal, &c.....30@19@40@10%

**Boards, Wash—**  
See Washboards.

**Bobs, Plumb—**  
Keuffel & Esser Co.....83 1/2%

**Boils—**  
Carriage, Machine, &c.—  
Common Carriage (cut thread):  
3/8 x 6 and Smaller.....75@10%  
Larger and Longer.....65@10@25@10%

Phila. Eagle, \$3.00 list May 21, '99 80%  
Bolt Ends, list Feb. 14, '95.....70@2 1/2@10%  
Machine, 3/8 x 4 and smaller 75@2 1/2@10%  
Machine, larger and longer 70@2 1/2@10%

**Door and Shutter—**  
Cast Iron Barrel, Janned, Round Brass Knob:  
Inch.....3 4 5 6 8  
Per doz. \$0.30 .35 .45 .56 .75

Cast Iron Spring Foot, Jap'd:  
Inch.....6 8 10  
Per doz.....\$1.15 1.40 2.00

Cast Iron Chain, Flat Janned:  
Inch.....6 8 10  
Per doz.....\$0.95 1.25 1.55

Cast Iron Shutter, Janned, Brass Knobs:  
Inch.....6 8 10  
Per doz.....\$0.80 .90 1.20

Wrt Barrel Jap'd.....80@10@10%  
Wrt Spring.....50@10@10%  
Wrt Shutter.....50@5@10@10%  
Wrt Square Neck.....75@75@10%  
Wrt Square, 66 1/2@10@66 1/2@10@10%  
Ives' Patent Door.....90%

**Plow and Stove—**  
Plow.....65@10@10@70%  
Stove.....82 1/2@10@10@—

## Tire—

Common.....80@80@10%  
Norway Iron.....80%

American Screw Company:  
Norway Phila., list Oct. 16, '84.....80%  
Eagle Phila., list Oct. 16, '84.....82%  
Bay State, list Dec. 28, '99.....80%  
Franklin Moore Co.:  
Norway Phila., list Oct. 16, '84.....80%  
Eagle Phila., list Oct. 16, '84.....82%  
Eclipse, list Dec. 28, '99.....80%  
Mount Carmel Bolt Co.:  
Norway Phila., list Oct. 16, '84.....80%  
Eagle Phila., list Oct. 16, '84.....82%  
Mount Carmel, list Dec. 28, '99.....80%  
Russell, Burdall & Ward Bolt & Nut Co.:  
Empire, list Dec. 28, '99.....80%  
Norway Phila., list Oct. 16, '84.....80%  
Upson Nut Co.:  
Tire Bolts.....72 1/2%

**Borers, Tap—**  
Borers Tap, Ring, with Handle:  
Inch.....1 1/4 1 1/2 1 3/4 2  
Per doz.....\$4.80 5.60 6.40 8.00

Inch.....2 1/4 2 1/2 2 3/4 3  
Per doz.....\$5.65 6.15 6.65 7.15

Enterprise Mfg. Co., No. 1, \$1.25; No. 2, \$1.65; No. 3, \$2.50 each.....25%

**Boxes, Mite—**  
C. E. Jennings & Co.....30%  
Langdon.....15@10%  
Perfection.....40%  
Seavey.....33 1/2%  
Stanley R. & L. Co.:  
Nos. 240 to 425.....30%  
Nos. 50 and 60.....35%

**Braces—**  
Common Ball American.....\$1.25@1.30  
Barber's.....50@10@60@10%  
Fray's Genuine Spofford's.....60%  
Fray's No. 70 to 120, 81 to 123, 207 to 411.....60%  
C. E. Jennings & Co.....50@5%  
Mayhew's Hatchet.....60%  
Mayhew's Quick Action Hay Pat. 50%  
Millers Falls Drill Braces.....25@10%  
P. S. & W. Co., Peck's Pat. 60@60@5%  
Stanley R. & L. Co.:  
Stanley.....35%  
Victor.....45%

**Brackets—**  
Wrought Steel.....80@10@80@10@5%  
Griffin's Pressed Steel.....80@10@10%  
Griffin's Folding Brackets.....70@10%  
Stowell's Cast Shelf.....75%  
Stowell's Sink.....60@10%  
Western W. G. Co., Wire.....60@10%

**Bright Wire Goods—**  
See Wire and Wire Goods.

**Broilers—**  
Kilbourne Mfg. Co.....75@20%  
Western W. G. Co.....80%  
Wire Goods Co.....75@75@10%

**Buckets, Galvanized—**  
Price per dozen:  
Quart.....19 12 14  
Water, Regular.....1 1/4 1 1/2 1 3/4 1 3/4  
Water, Heavy.....3 1/4 3 1/4 3 1/4 3 1/4  
Fire, Rd. Bottom.....2.80 2.55 2.95  
Well.....2.55 2.87 3.15

**Bucks, Saw—**  
Hoosier..... $\frac{1}{2}$  gro. \$36.00

**Bull Rings—See Rings, Bull**

**Butts—**  
Wrought, list Sept., '96.....20¢@—%  
Cast Brass, Tiebout's.....50%

**Cast Iron—**  
Fast Joint, Broad.....40@10@50%  
Fast Joint, Narrow.....40@10@50%  
Loose Joint.....70@10@75%  
Loose Pin.....70@10@75%  
Mayer's Hinges.....70@10@75%  
Parliament Butts.....70@10@75%

**Wrought Steel—**  
Table and Back Flaps.....75%  
Narrow and Broad.....75%  
Inside Blind.....75%  
Loose Pin.....75%  
Loose Pin, Jap'd.....70@10%  
Loose Pin, Ball and Steele Tip.....85%  
Janned Ball Tip Butts.....70@10%  
Bronzed, Wrt., Nar. and Inside Blind Butts.....55@10%

**Cages, Bird—**  
Hendryx Brass:  
3000, 5000, 1100 series.....5%  
1200 series.....33 1/2%  
250, 300, 600 and 900 series.....60@10%

Hendryx Bronze: 40&10%  
700, 800 series.....40&10%  
Hendryx Enamelled.....40&10%

### Calipers—See Compasses.

### Calks, Toe and Heel—

Blunt, 1 prong.....per lb. 44¢  
Sharp, 1 prong.....per lb. 44¢  
Gautier, Blunt.....per lb. 44¢  
Gautier, Sharp.....per lb. 44¢  
Perkins, Blunt Toe.....per lb. 44¢  
Perkins, Sharp Toe.....per lb. 44¢

### Can Openers—

See Openers, Can.

### Cans, Milk—

5 8 10 gal.  
Illinois Pattern.....\$1.35 1.85 2.05 each.  
New York Pattern.....1.50 2.20 2.45 each.  
Baltimore Pattern.....1.50 2.20 2.45 each.  
Dubuque.....1.35 1.80 1.75 each.

### Cans, Oil—

Buffalo Family Oil Cans:  
3 5 10 gal.  
\$18.00 60.00 125.00 gro., net.

### Caps, Percussion—

Eley's E. B.....52¢ 55¢  
G. D.....per M 34¢ 35¢  
F. L.....per M 40¢ 42¢  
G. E.....per M 38¢ 40¢  
Musket.....per M 62¢ 63¢

### Primers—

Berdan Primers, 2¢ per M.....90%  
B. L. Caps (Starbrand Shells)  
2¢ per M.....90%  
All other primers per M \$1.52¢ 1.60

### Cartridges—

Blank Cartridges:  
32 C. F., \$5.50.....10¢ 5¢  
38 C. F., \$7.00.....10¢ 5¢  
22 cal. Rim, \$1.50.....10¢ 5¢  
32 cal. Rim, \$2.75.....10¢ 5¢  
B. B. Caps, Con. Ball, Sugd. \$1.90  
B. B. Caps, Round Ball.....\$1.49  
Central Fire.....25¢  
Target and Sporting Rifle.....15¢ 5¢  
Primed Shells and Bullets.....15¢ 5¢  
Rim Fire, Sporting.....50¢  
Rim Fire, Military.....15¢ 5¢

### Castors—

Bed.....70¢ 70¢ 10¢  
Plate.....60¢ 10¢ 60¢ 10¢ 5¢  
Philadelphia.....75¢ 75¢ 10¢  
Acme, Ball Bearing.....35¢ 35¢  
Bosch Anti-Friction.....70¢ 10¢  
Gem (Roller Bearing).....80¢  
Martin's Patent (Phoenix).....45¢  
Standard Ball Bearing.....45¢  
Tucker's Patent low list.....30¢  
Yale (Double Wheel) low list.....50¢

### Cattle Leaders—

See Leaders, Cattle.

### Chain, Coil—

American Coil, Straight Link:  
See Trace Report.

German Coil.....60¢ 10¢ 10¢ 70%

### Halter—

Halter Chains.....60¢ 10¢ 60¢ 10¢ 10¢  
German Pattern Halter Chains,  
list July 24, '97.....60¢ 10¢ 10¢  
Covert Mfg. Co.....35¢ 5¢  
Halter.....35¢ 5¢  
Covert's Saddlery Works.....70%

### Cow Ties—

See Halters and Ties.

### Trace, Wagon, &c.—

Traces, Western Standard: 100 pr.  
6½-6-3, Strght, with ring \$23.50  
6½-6-2, Strght, with ring \$24.50  
6½-8-2, Strght, with ring \$28.50  
6½-10-2, Strght, with ring \$32.00  
NOTE—Add 2¢ per pair for Hooks.  
Twist Traces 2¢ per pair higher than  
Straight Link.

### Trace, Wagon and Fancy

Chains.....60¢ 5¢ 60¢ 10¢ 5¢

### Miscellaneous—

Jack Chain, list July 10, '93:  
Iron.....60¢ 10¢ 60¢ 10¢ 70%  
Brass.....60¢ 10¢ 60¢ 10¢ 10%  
Safety Chain.....75¢ 75¢ 10%  
Gal. Pump Chain.....lb. 5¢ 5¢ 4%  
Covert Mfg. Co.:  
Breast.....35¢ 5¢  
Heel.....35¢ 5¢  
Rein.....35¢ 5¢  
Stallion.....35¢ 5¢  
Covert Sd. Works:  
Breast.....70%  
Hold Back.....70%  
Rein.....70%  
Onida Community:  
Am. Dog Leads and Kennel Chains,  
40¢ 40¢ 5¢  
Niagara Dog Leads and Kennel  
Chains.....45¢ 50¢ 5¢  
Wire Goods Co.:  
Dog Chain.....70¢ 10%  
Universal Dbl.-Jointed Chain.....50%

### Chain and Ribbon, Sash—

Onida Community:  
Copper Chain.....60¢ 5¢  
Steel Chain.....60%  
Pullman:  
Bronze Chain.....60%  
Steel Chain.....60¢ 10%  
Sash Chain Attachments, per set 8¢  
Aluminum Sash Ribbon, per 100  
ft.....\$1.25¢ 33.00  
Sash Ribbon Attachments, per set 8¢

### Chalk—(From Jobbers.)

Carpenters' Blue.....gro. 38¢ 10¢  
Carpenters' Red.....gro. 35¢ 10¢  
Carpenters' White.....gro. 29¢ 30¢  
See also Crayons.

### Checks, Door—

Bardsley's.....45%  
Eclipse.....60¢ 10%  
Pullman, per gro.....\$4.00  
Russwin.....40%

### Chests, Tool—

American Tool Chest Co.:  
Boys' Chests, with Tools.....55%  
Youths' Chests, with Tools.....40%  
Gentlemen's Chests, with Tools.....30%  
Farmers' Carpenters', etc., Chests,  
with Tools.....20%  
Mechanists' and Pipe Fitters'  
Chests, Empt.....50%  
Tool Cabinets.....50%  
C. E. Jennings & Co.'s Machinists'  
Tool Chests.....33¢ 10%

### Chisels—

Socket Framing and Firmer  
Standard List.....75¢ 75¢ 10%  
Buck Bros.....30%  
Charles Buck.....30%  
C. E. Jennings & Co. Socket Firmer  
No. 10.....60%  
C. E. Jennings & Co. Socket Fram-  
ing No. 15.....60%  
Ohio Tool Co.'s.....70%  
Swan's.....75%  
L. & J. J. White.....30¢ 30¢ 5%

### Tanged—

Tanged Firmers, 33 1-3 to 33 1-3 10%  
Buck Bros.....30%  
Charles Buck.....30%  
C. E. Jennings & Co. 191.....25%  
L. & J. J. White, Tanged.....25¢ 5%

### Cold—

Cold Chisels, good quality.....13¢ 15¢  
Cold Chisels, fair quality.....11¢ 12¢  
Cold Chisels, ordinary.....9¢ 10¢

### Chucks—

Beach Pat., each \$8.00.....35¢ 5¢  
Engard.....25%  
Blacksmiths'.....25%  
Jacobs' Drill Chucks.....35%  
Pratt's Positive Drive.....25%  
Skinner Patent Chucks:  
Independent Lathe Chucks.....50%  
Universal.....50%  
Combination.....50%  
Drill Chucks, New Model.....50%  
Drill Chucks, Standard.....45%  
Drill Chuck, Skinner Pat., all sizes.....35%  
Drill Chucks, Positive Drive.....30%  
Planer Chucks.....25%  
Face Plate Jaws.....40%  
Standard Tool Co.:  
Improved Drill Chuck.....45%  
Union Mfg. Co.:  
Combination.....50%  
Czar Drill.....35%  
Combination Geared Scroll.....40%  
Independent Scroll.....50%  
Independent Steel.....40%  
Union Drill.....45%  
Universal.....50%  
Independent Iron F. Plate Jaws.....40%  
Independent Steel F. Plate Jaws.....40%  
Walcott Patent Chucks:  
Lathe Chucks.....50%  
Little Giant Auxiliary Drill.....50%  
Little Giant Double Grip Drill.....50%  
Little Giant Drill, Improved.....50%  
Oneida Drill.....50%  
Scroll Combination Lathe.....50%

### Clamps—

Adjustable, Hammers'.....20¢ 20¢ 5%  
Cabinet, Sargent's.....50¢ 10%  
Carriage Makers', P. S. & W.  
Co.....40¢ 10¢ 50%  
Carriage Makers', Sargent's.....35% 10%  
Besly, Parallel.....35% 10%  
Lineman's, Utica Drop Forge & Tool  
Co.....40%  
Saw Clamps, see Vises, Saw Filers.  
Wood Workers, Hammers'.....10¢ 10%

### Cleaners, Drain—

Iwan's Champion, Adjustable.....55%  
Iwan's Champion, Stationary.....45%

### Sidewalk—

Star Socket, All Steel, 39 doz. \$4.05 net  
Star Shank, All Steel, 39 doz. \$3.24 net  
W. & C. Shank, All Steel, 39 doz.,  
7½ in., \$3.00; 8 in., \$3.25.

### Cleavers, Butchers'—

Foster Bros.....30%  
New Haven Edge Tool Co.'s.....45%  
Fayette R. Plumb.....33¢ 33¢ 10%  
L. & J. J. White.....30%

### Clippers—

Chicago Flexible Shaft Company:  
'98 Chicago Horse.....\$8.75 } 15%  
1902 Chicago Horse.....10.75 }  
20th Century Horse, each.....15.00 } 20%  
Lightning Belt.....15.00 }  
Chicago Belt.....20.00 } 15%  
Stewart's Patent Sheep, \$12.75.....20%

### Clips, Axle—

Eagle, 5-16 and ¾ in. 75¢ 75¢ 10%  
Norway, 5-16 and ¾ in. 60¢ 10¢ 70%

### Cloth and Netting, Wire

—See Wire, &c.

### Cocks, Brass—

Hardware list:  
Compression, Plain Bibbs,  
Globe, Kerosene, Racking,  
&c., Cocks.....75¢ 75¢ 5%

### Coffee Mills—

See Mills, Coffee.

### Collars, Dog—

Nickel Chain, Walter B. Stevens &  
Son's list.....40%  
Leather, Walter B. Stevens & Son's  
list.....40%

### Combs, Curry—

Metal Stamping Co.....40%

### Mane and Tail—

Covert's Saddlery Works.....60¢ 10%

### Compasses, Dividers, &c.

Ordinary Goods.....75¢ 75¢ 10%  
Bemis & Call Hdw. & Tool Co.:  
Dividers.....65%  
Calipers, Double.....65%  
Calipers, Inside or Outside.....65%  
Calipers, Wing.....60%  
Compasses.....50%

### Conductor Pipe—

L. C. L. to Dealers:  
Galvanized.

Territory. Nested. Not nested.  
Eastern.....70¢ 15% 70¢ 10%  
Central.....70¢ 7½¢ 70¢ 21¢  
Southern.....70¢ 12½¢ 60¢ 20%  
So. Western.....60¢ 20% 60¢ 10%

### Copper.

1½ 16 oz.  
Eastern.....50¢ 10%  
Central.....50¢ 7½¢  
Southern.....50¢ 5%  
So. Western.....50¢ 2½¢  
Terms, 60 days; 2% cash 10 days. Fac-  
tory shipments generally delivered.  
See also Eave Troughs.

### Coolers, Water—

Gal, each, 2 3 4 6 8  
Labrador.....\$1.20 \$1.50 \$1.80 \$2.10 \$2.70  
Gal.....3 4 6 8  
Iceland, ea.....\$1.80 \$2.10 \$2.40 \$3.00  
Gal.....2 3 4 6 8  
Galvanized, ea.....\$1.85 \$2.00 \$2.25 \$2.90 \$3.90  
Galvanized, Lined, side handles,  
Gal.....2 3 4 6 8  
Each.....\$1.95 \$2.15 \$2.40 \$3.30 \$1.15  
White Enamelled.....25%  
Agate Lined.....25%

### Coopers' Tools—

See Tools, Coopers'.

### Coppers' Soldering—

Soldering Coppers, 3 lbs. to pair  
and heavier, 20¢ 20¢ 10% light-  
er than 3 lbs. to pair 22¢ 22¢ 10%

### Cord—

Sash.....lb. 35¢

Braided, White, Com., Nos. 6  
to 12.....lb. 23¢ 24¢ 10%

Cable Laid Italian.....lb. 16¢

Common India.....lb. 10¢ 10% 10%

Cotton Sash Cord, Twisted, 17¢ 19¢

Patent Russia.....lb. 14¢

Cable Laid Russia.....lb. 15¢

India Hemp, Braided.....lb. 18¢

India Hemp, Twisted.....lb. 12¢ 13¢

Patent India, Twisted, lb. 12¢ 13¢

Anniston Cordage Co.: Braided Cotton  
Old Glory, Nos. 7 to 12.....lb. 29¢

Anniston, Nos. 8 to 12, 23¢; No. 7,  
25¢; No. 6, 24¢; Anniston  
Drab, Nos. 7 to 12, 19¢; No. 6, 26¢;  
Anniston Mahogany, 27¢

Pearl Braided, cotton, No. 6, 39¢; No. 7,  
24¢; No. 8, 23¢; No. 9, 22¢; No. 10,  
25¢; No. 11, 25¢; No. 12, 26¢

Eddyton Braided, Nos. 8, 9 and  
10, 25¢; 7, 25¢; 6, 26¢

Harmony Cable Laid Italian, Nos. 7  
to 12.....lb. 23¢

Peelless:  
Cable Laid Italian.....16¢

Cable Laid Russian.....14¢

Cable Laid India.....12¢

Braided India.....18¢

Pullman:  
Wire Sash Cord.....10%

Sash Cord Attachments, per doz. 10¢

Samson, Nos. 8 to 12:  
Braided, Drab Cotton.....lb. 40¢

Braided, Italian Hemp.....lb. 40¢

Braided, Linen.....lb. 55¢

Braided, White Cotton or Spot.....lb. 28¢

Massachusetts, White.....lb. 28¢

Massachusetts, Drab.....lb. 32¢

Phoenix, White, Nos. 8 to 12, 24¢;  
No. 7, 24¢; No. 6, 25¢

Silver Lake:  
A quality, Drab.....40¢

A quality, White.....35¢

B quality, Drab.....35¢

B quality, White.....30¢

Italian Hemp.....40¢

Linen.....57¢

See also Chain and Ribbon.

### Wire, Picture—

List Oct., '00.....85¢ 10¢ 10¢ 85¢ 10¢ 10¢ 5%

Hendryx Standard Wire Picture Cord.....85¢ 10¢ 5%

### Cradles—

Grain.....40¢ 12½%

### Crayons—

White Royal Crayons, gr. 60¢ 64¢

Cases, 100 gro., \$5.00 at factory.

D. M. Steward Mfg. Co.:  
Jumbo Crayons.....gr. 35¢

Metal Workers' Crayons, gr. 25¢

Soapstone Pencils, round.....gr. 15¢

or square.....gr. 15¢

Rolling Mill Crayons.....gr. 25¢

Railroad Crayons (composition).....gr. 25¢

Zelnicke's Lumber:  
Red, Blue, Green.....39 gro. 36.50

Black.....39 gro. 44.00

See also Chalk.

### Crooks, Shepherds'—

Fort Madison, Heavy.....39 doz. 77.00

Fort Madison, Light.....39 doz. 36.50

### Crow Bars—See Bars, Crow.

### Cultivators—

Victor Garden.....50%

### Cutlery, Table—

International Silver Company:  
No. 12 M'dn Knives, 1847, 39 doz. \$3.50

Star, Eagle, Rogers & Hamilton  
and Anchor.....39 doz. 33.00

Wm. Rogers & Son.....39 doz. 22.50

### Cutters—

Glass:  
H. H. Mayhew Co.....40%

Red Devil.....50%

Smith & Hemenway Co.....50%

Woodward.....40%

### Meat and Food—

American.....30%

Nos. 1 and 2.....30%

Each.....\$5 \$7 \$10 \$25 \$50 \$60

Enterprise.....25¢ 25¢ 7½%

Nos. 5 10 12 22 32

Each.....\$2 \$3 \$2.75 \$4.50 \$6

Dixon's.....39 doz. 40¢ 50%

Nos. \$14.00 \$17.00 \$19.00 \$30.00

Ideal.....40¢ 10¢ 50%

Little Giant.....39 doz. 40¢ 50%

Nos. 305 310 312 320 322

\$35.00 \$18.00 \$14.00 \$72.00 \$68.00

N. E. Food Choppers.....25%

New Triumph No. 605, 39 doz. 40¢ 50%

Russwin Food, No. 1, \$24.00; No. 2,  
\$27.00.....45¢ 10¢ 10%

Woodruff's.....39 doz. 40¢ 50%

Nos. 100 150

Enterprise Beef Shavers.....25¢ 30%

### Slaw and Kraut—

Henry Dighton & Sons:  
Slaw, Corn Grater, &c.....40%

Kraut Cutters, 24 x 7, 26 x 8, 30  
x 9.....55%

Kraut Cutters, 36 x 12, 40 x 12.....40%

J. M. Mast Mfg. Co.:  
Slaw Cutters, 1 Knife.....39 doz. \$3.00

Combined Slaw Cutter and Corn  
Grater.....39 doz. \$4.00

Tucker & Dorsey Mfg. Co.:  
Kraut Cutters.....40%

Slaw Cutters, 1 Knife.....gr. \$18.00 \$20

Slaw Cutters, 2 Knife.....gr. \$22.00 \$24

Tobacco:

All Iron, Cheap.....\$4.25¢ 43.50

Enterprise.....25¢ 50

National, 39 doz. No. 1, \$21; No. 2,  
\$18.....



**Fasteners, Blind—**  
Zimmerman's ..... 50¢10¢  
Walling's ..... 40¢10¢  
**Cord and Weight—**  
Ives ..... 40¢  
**Faucets—**  
Cork Lined ..... 50¢50¢10¢  
Metallic Key, Leather Lined ..... 60¢10¢70¢  
Red Cedar ..... 40¢10¢50¢  
Petroleum ..... 70¢10¢75¢  
B. & L. B. Co.'s ..... 60¢10¢  
Star ..... 60¢10¢  
West Lock ..... 50¢10¢  
John Sommer's Peerless Tin Key ..... 40¢  
John Sommer's Boss Key ..... 50¢  
John Sommer's Victor Mtl. Key ..... 50¢10¢  
John Sommer's Duplex Metal Key ..... 60¢  
John Sommer's Diamond Lock ..... 40¢  
John Sommer's I. X. L. Cork Lined ..... 50¢  
John Sommer's Reliable Cork Lined ..... 60¢10¢  
John Sommer's Chicago Cork Lined ..... 50¢  
John Sommer's O. K. Cork Lined ..... 50¢  
John Sommer's No Brand, Cedar ..... 50¢  
John Sommer's Perfection, Cedar ..... 40¢  
McKenna, Brass ..... 25¢  
Burglar Proof, N. P. ..... 25¢  
Improved, ¾ and 1 inch ..... 25¢  
Self Measuring ..... 40¢10¢  
Enterprise, ¾ doz. \$36.00 ..... 40¢10¢  
Lane's, ¾ doz. \$36.00 ..... 40¢10¢  
National Measuring, ¾ doz. \$36.40/10¢  
**Felloe Plates—**  
See Plates, Felloe.  
**Files— Domestic—**  
List revised Nov. 1, 1899.  
Best Brands ..... 70¢10¢75¢5¢  
Standard Brands, 75¢10¢75¢10¢10¢  
Lower Grade ..... 75¢10¢10¢80¢10¢  
**Imported—**  
Stubs' Tapers, Stubs' list, July 24, '97 ..... 33-13¢10¢  
**Fixtures, Fire Door—**  
Richards Mfg. Co.'s ..... \$3.75  
Universal, No. 103 ..... \$3.75  
Special, No. 104 ..... \$3.75  
Fusible Links, No. 96 ..... 50¢  
Expansion Bolts, No. 107 ..... 60¢10¢  
**Grindstone—**  
Inch ..... 15 17 19 21 24  
Per doz. \$2.15 2.85 3.25 3.75 4.50  
P. S. & W. Co. .... 30¢10¢40¢  
Reading Hardware Co. .... 60¢  
Sargent's ..... 70¢  
Stowell's Giant Grindstone ..... 60¢  
Stowell's Grindstone Fixtures, Extra Heavy ..... 50¢10¢10¢  
Stowell's Grindstone Fixtures, Light ..... 60¢10¢  
**Fodder Squeezers—**  
See Compressors.  
**Forks—**  
NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.  
Iowa Dig-Ezy Potato ..... 60¢10¢  
Victor, Hay ..... 60¢15¢21¢  
Victor, Manure ..... 60¢  
Victor, Header ..... 65¢  
Champion, Hay ..... 60¢  
Champion, Header ..... 60¢15¢21¢  
Champion, Manure ..... 60¢15¢21¢  
Columbia, Hay ..... 60¢20¢  
Columbia, Manure ..... 70¢  
Columbia, Spading ..... 70¢12¢  
Hawkeye Wood Barley ..... 40¢  
W. & C. Potato Digger ..... 60¢20¢  
Acme Hay, 4 time ..... 60¢10¢5¢  
Dakota Header ..... 60¢20¢  
Jackson Steel Barley ..... 60¢20¢  
Kansas Header ..... 60¢  
W. & C. Favorite Wood Barley ..... 40¢  
Plated—See Spoon.  
**Frames—Saw—**  
White, S'g't Bar, per doz. 75¢80¢  
Red, S'g't Bar, per doz. \$1.00¢1.25  
Red, Dbl. Brace, per doz. \$1.40¢1.50  
**Freezers, Ice Cream—**  
Qt. .... 1 2 3 4 6  
Each ..... \$1.30 \$1.60 \$1.90 \$2.20 \$2.60  
**Fruit and Jelly Presses—**  
See Presses, Fruit and Jelly.  
**Fry Pans—See Pans, Fry.**  
**Fuse—** Per 1000 Feet.  
Hemp ..... \$2.75  
Cotton ..... 3.20  
Waterproof Sgl. Taped. 3.65  
Waterproof Dbl. Taped. 4.40  
Waterproof Tpl. Taped. 5.15  
**Gates, Molasses and Oil—**  
Stebbins' Pattern, 80¢10¢80¢10¢5¢  
**Gauges—**  
Marking, Mortise, &c. .... 50¢10¢50¢10¢10¢5¢  
Chapin-Stephens Co.'s ..... 50¢10¢50¢10¢10¢10¢  
Marking, Mortise, &c. 50¢10¢50¢10¢10¢  
Scholl's Patent ..... 50¢10¢50¢10¢10¢  
Door Hangers ..... 50¢50¢10¢  
Stanley R. & L. Co.'s Butt and Rabbit Gauge ..... 35¢  
Marking and Mortise ..... 60¢  
Wire, Brown & Sharpe's ..... 25¢  
Wire, Morse's ..... 25¢  
Wire, P. S. & W. Co. .... 34¢  
**Gimlets—** Single Cut—  
Numbered assortments, per gro.  
Nail, Metal, No. 1, \$2.00; 2, \$2.30  
Spike, Metal, No. 1, \$4.00; 2, \$4.30  
Nail, Wood Handled, No. 1, \$2.30; 2, \$2.60  
Spike, Wood Handled, No. 1, \$4.30; 2, \$4.60  
**Glass, American Window**  
See Trade Report.  
**Glasses, Level—**  
Chapin-Stephens Co. .... 60¢10¢10¢10¢

**Glue, Liquid Fish—**  
Bottles or Cans, with Brush ..... 25¢10¢50¢  
Cans (½ pts., pts., qts., ½ gal., gal.) ..... 25¢10¢48¢  
International Glue Co. (Martin's) ..... 40¢  
**Grease, Axle—**  
Common Grade ..... gro. \$4.50¢15.50  
Dixon's Everlasting, 10-lb pails, ea. 85¢  
Dixon's Everlasting, in boxes, ½ doz. 1b, \$1.20; 2 lb, \$2.00  
Helmet Hard Oil ..... 25¢  
**Grips, Nipple—**  
Perfect Nipple Grips ..... 40¢10¢22¢  
**Griddles, Soapstone—**  
Pike Mfg. Co.'s ..... 33¢10¢33¢10¢  
**Grindstones—**  
Bicycle Emery Grinder ..... \$6.50  
Bicycle Grindstones, each ..... \$2.50¢3.00  
Pike Mfg. Co.'s .....  
Improved Family Grindstones, per inch, ¾ doz. ..... \$2.00  
Pike Mower and Tool Grinder, each ..... \$6.00  
Velox Ball Bearing, Mounted, Angle Iron Frames, each ..... \$3.00  
**Halters and Ties—**  
Cow Ties ..... 60¢10¢60¢10¢  
Covert Mfg. Co.'s .....  
Web ..... 35¢5¢  
Jute Rope ..... 50¢  
Sisal Rope ..... 40¢10¢  
Cotton Rope ..... 45¢  
Hemp Rope ..... 45¢  
Covert's Saddlery Works ..... 70¢  
Jute and Leather Halters ..... 70¢  
Jute and Manila Rope Halters ..... 70¢  
Sisal Rope Halters ..... 60¢20¢  
Jute, Manila and Cotton Rope Ties ..... 70¢  
Sisal Rope Ties ..... 60¢10¢  
Onoda Community ..... 40¢10¢45¢  
Am. Coil and Halters ..... 40¢10¢45¢  
Am. Cow Ties ..... 45¢50¢  
Niagara Coil and Halters ..... 45¢50¢45¢  
Niagara Cow Ties ..... 45¢50¢10¢5¢  
E. T. Rugg & Co.'s .....  
Leather Halters ..... 50¢  
Web Halters and Webbing ..... 60¢  
Jute and Sisal Rope Halters ..... 60¢  
Jute and Sisal Horse and Cattle Ties ..... 60¢  
Cotton Horse Ties ..... 60¢  
Liverty Ties, Braided ..... 60¢  
**Hammers—**  
Handled Hammers—  
Heller's Machinists' ..... 40¢10¢40¢10¢10¢  
Heller's Farriers ..... 40¢10¢40¢10¢10¢  
Magnetic Tack, Nos. 1, 2, 3, \$1.25, \$1.50, \$1.75 ..... 50¢  
Peck, Stow & Wilcox, Steel ..... 50¢  
Fayette R. Plumb's .....  
Plumb, A. E. Nail ..... 33¢10¢33¢10¢45¢  
Engineers' and R. S. Hand ..... 50¢10¢50¢10¢10¢10¢5¢  
Machinists' Hammers, 50¢50¢10¢5¢  
Riveting and Timbers ..... 40¢25¢40¢10¢25¢  
Sargent's C. S. New List ..... 40¢  
**Heavy Hammers and Sledges**  
Under 3 lb., per lb. 50¢ ..... 80¢10¢10¢85¢  
3 to 5 lb., per lb. 40¢ ..... 80¢10¢10¢85¢  
Over 5 lb., per lb. 30¢. 85¢10¢10¢  
Wilkinson's Smiths' ..... lb. 91¢10¢  
**Handles—**  
Agricultural Tool Handles  
Axe, Pick, &c. .... 60¢5¢10¢10¢5¢  
Hoe, Rake, &c. .... 45¢10¢5¢5¢  
Fork, Shovel, Spade, &c. .... 45¢10¢5¢5¢  
Long Handles ..... 45¢10¢5¢5¢  
D Handles ..... 40¢  
**Cross-Cut Saw Handles—**  
Atkins' ..... 40¢  
Champion ..... 45¢45¢10¢  
Disston's ..... 50¢  
**Mechanics' Tool Handles—**  
Auger, assorted ..... gro. \$2.50¢\$2.85  
Brad Axl. .... gro. \$1.65¢\$1.85  
Chisel Handles:  
Apple Tanged Firmer, gro. assorted ..... \$2.10¢\$2.43  
Hickory Tanged Firmer, gro. assorted ..... \$2.15¢\$2.40  
Apple Socket Firmer, gro. assorted ..... \$1.75¢\$1.95  
Hickory Socket Firmer, gro. assorted ..... \$1.45¢\$1.60  
Hickory Socket Framing, gro. assorted ..... \$1.60¢\$1.75  
File, assorted ..... gro. \$1.50¢\$1.90  
Hammer, Hatchet, &c. .... 60¢10¢60¢10¢10¢10¢  
Hand Saw, Varished, doz. 80¢85¢; Not Varished, ..... 65¢75¢  
Plane Handles:  
Jack, doz. 30¢; Jack, Bolted, 75¢  
Fore, doz. 45¢; Fore, Bolted, 90¢  
Chapin-Stephens Co.'s .....  
Carving Tool ..... 40¢10¢10¢  
Chisel ..... 55¢65¢10¢  
File and Awl ..... 55¢65¢10¢  
Saw and Plane ..... 40¢10¢10¢  
Screw Driver ..... 40¢10¢10¢  
Miller's Falls Adj. and Ratchet Auger Handles ..... 15¢10¢  
Nicholson Simplicity File Handle ..... ¾ gro. \$0.85¢\$1.50  
**Hangers—**  
NOTE.—Barn Door Hangers are generally quoted per pair, without track, and Parlor Door Hangers per double set with track, &c.  
Barn Door, New Pattern, Round Groove, Regular:  
Inch ..... 3 4 5 6 8  
Single Doz. \$0.90 1.25 1.60 1.95 2.50  
Barn Door, New England Pattern, Check Back, Regular:  
Inch ..... 3 4 5 6  
Single Doz. .... \$1.30 1.85 2.50 3.00  
Allith Mfg. Co.'s .....  
Reliable, No. 1 ..... per doz. \$8.00  
Reliable, No. 2 ..... per doz. \$8.00

Chicago Spring Butt Co.:  
Friction ..... 25¢  
Oscillating ..... 25¢  
Big Switch ..... 25¢  
Chisholm Moore Mfg. Co.:  
Baggage Car Door ..... 50¢  
Elevator ..... 30¢  
Railroad ..... 50¢  
Cronk & Carrier Mfg. Co.:  
Loose Axle ..... 60¢10¢  
Roller Bearing ..... 70¢  
Griffin Mfg. Co.:  
Solid Axle, No. 10, \$12.00 ..... 70¢  
Roller Bearing, No. 11, \$15.00, 70¢  
Roller Bearing, Ex. Hy., No. 2, \$18.00 ..... 70¢  
Hind Hangers, \$16.00 ..... 60¢10¢  
Lane Bros. Co.:  
Parlor Ball Bearing ..... \$4.00  
Parlor Standard ..... \$3.15  
Parlor, No. 105 ..... \$2.85  
Parlor, New Model ..... \$2.80  
Parlor, New Champion ..... No. 25  
Barn Door, Standard ..... 60¢25¢  
Hinged ..... 10¢ \$6.10  
Covered ..... 60¢22¢  
Special ..... 70¢5¢  
Lawrence Bros.:  
Advance ..... 60¢10¢  
Cleveland ..... 75¢  
Clippier, No. 75 ..... 60¢  
Crown ..... 60¢10¢  
Easy Parlor Door, Dbl. Sets, \$2.50; Single Sets, \$1.25 ..... 60¢5¢  
Giant ..... 60¢5¢  
Homer ..... 70¢5¢  
New York ..... 60¢10¢  
Peerless ..... 75¢  
Sterling ..... 60¢10¢  
McKinney Mfg. Co.:  
No. 1, Special, \$15 ..... 60¢10¢  
No. Standard, \$18 ..... 60¢10¢  
Hinged Hangers, \$18 ..... 50¢  
Meyers' Stayon Hangers ..... 60¢5¢  
Richards Mfg. Co.:  
Pioneer Wood Track No. 3, \$2.00  
Ball B'r St'l Track No. 10, 50¢10¢  
Roller B'r St'l Track No. 12, 32.15  
Roller B'r St'l Track No. 13, 32.30  
Hollow B'r St'l Track No. 19, 50¢10¢  
Adjustable Track Tandem Trolley Track No. 16 ..... 50¢10¢  
Seal, Steel Track No. 8 ..... \$2.25  
Auto Adj. Track No. 22, 50¢10¢  
Trolley H. D. No. 17 ..... \$1.25  
Trolley F. D. No. 120 ..... \$2.10  
Trolley F. D. No. 121 ..... \$2.25  
Trolley F. D. No. 150 ..... \$2.35  
Safety Underwriters F. D. No. 101 ..... 50¢  
Tandem No. 44, 2½ and 3 60¢10¢  
Palace, Adjustable Track No. 132 ..... 50¢10¢  
Royal, Adjustable Track No. 122 ..... 50¢10¢  
Ives Wood Track No. 1 ..... \$2.00  
Trolley B. D. No. 20 ..... 50¢10¢  
Trolley B. D. No. 24 ..... \$1.30  
Trolley B. D. No. 27 ..... \$1.40  
Trolley B. D. No. 28 ..... \$1.60  
Roller Bearings Nos. 39, 41, 43 ..... 75¢  
Anti-Friction No. 42 ..... 60¢20¢  
Hinged Tandem No. 48 ..... 60¢5¢  
Folding Door B. B. Swivel No. 135 ..... 40¢  
Safety Door Ranger Co.:  
Storm King Safety ..... 60¢  
U. S. Standard Hinge ..... 60¢  
Stowell Mfg. & Foundry Co.:  
Ajax Parlor Ball Bearing ..... 40¢  
Ajax Parlor Door ..... 50¢10¢5¢  
Apex Parlor Door ..... 50¢10¢5¢  
Atlas ..... 60¢  
Baggage Car Door ..... 50¢  
Climax Anti-Friction ..... 50¢10¢  
Elevator ..... 40¢  
Express ..... 50¢  
Freight Car Door ..... 60¢  
Interstate ..... 60¢10¢  
Lundy Parlor Door ..... 50¢10¢  
Magic ..... 60¢  
Matchless ..... 60¢10¢  
Nansen ..... 70¢5¢  
Parlor Door ..... 50¢10¢  
Railroad ..... 50¢10¢  
Rex Hinge Door ..... 60¢  
Street Car Door ..... 50¢  
Steel, Nos. 300, 404, 504 ..... 50¢10¢  
Universal Fire Door ..... 40¢  
Wild West Warehouse Door ..... 50¢  
Zenith for Wood Track ..... 50¢10¢  
A. J. Sweet Iron Works:  
Check Back ..... 70¢  
Climax Anti-Friction ..... 50¢10¢  
Eagle ..... 70¢  
H. H. Hinge ..... 60¢  
New Perfection ..... 60¢  
Pilot ..... 60¢  
Pilot Hinge ..... 60¢  
Rider Wooster ..... 65¢  
Western Pattern ..... 70¢  
Taylor & Boggs Fry Co.'s Kidder's Roller Bearing, 50¢15¢10¢5¢  
Wilcox Mfg. Co.:  
Bike Roller Bearing, ¾ doz. \$5.00  
C. J. Roller Bearing ..... 60¢10¢  
Cable Ball Bearing ..... 50¢  
Cable Ball Bearing ..... 40¢  
Ives Wood Track ..... 60¢10¢  
L. T. Roller Bearing ..... 60¢10¢5¢  
New Era Roller Bearing, 50¢10¢  
O. K. Roller Bearing, 60¢10¢5¢  
Prindle Wood Track ..... 40¢  
Richards' Steel Track ..... 50¢10¢  
Spencer Roller Bearing ..... 60¢10¢  
Tandem, Nos. 1 and 2 ..... 60¢  
Underwriters' Roller Bearing, 40¢  
Vibret ..... 50¢  
Wilcox Auditing Ball B'r No. 20 ..... 50¢  
Wilcox Barn Trolley No. 125, 40¢  
Wilcox Elev. Door, Nos. 112 and 122½ ..... 50¢  
Wilcox Elev. Door No. 132 ..... 40¢  
Wilcox Fry Trolley, Roller Bearing ..... 30¢  
Wilcox Le Roy Noiseless Ball Bearing ..... 40¢  
Wilcox New Century, 50¢10¢10¢  
Wilcox O. K. Steel Track ..... 50¢  
Wilcox O. K. Trolley ..... 50¢  
Wilcox Trolley Ball Bearing, 40¢  
Wilcox Wideman Narrow Gauge Ball Bearing ..... 40¢  
For Track, see Rail.  
**Hangers—Garment—**  
Pullman Trouser, ¾ gro. 1 pair Flat Aluminum, \$9.00; 1 pair Round Nickeled, \$9.00; 4 pair Round Nickeled ..... \$27.00  
Victor Folding ..... ¾ gro. \$9.60  
Western, W. G. Co. .... 70¢10¢

**Gate—**  
Myers' Patent Gate Hangers, ¾ doz. net ..... \$4.50  
**Joist and Timber—**  
Lane Bros. Co. .... 30¢  
**Hasps—**  
Griffin's Security Hasp ..... 50¢  
McKinney's Perfect Hasp, ¾ doz. 50¢  
**Hatchets—**  
Regular list, first quality ..... 50¢  
Second quality \$1.00 per doz. less than first quality.  
**Heaters, Carriage—**  
Clark, No. 5, \$1.75; No. 5B, \$2.00; No. 3, \$2.25; No. 3D, \$2.75; No. 7D, \$3.00; No. 3E, \$3.25; No. 1, \$3.50 ..... 15¢  
Clark Coal, ¾ doz. \$0.75 ..... 10¢  
**Hinges—**  
**Blind and Shutter Hinges—**  
Surface Gravity Locking Blind: (Victor; National; 1868 O. P.; Niagara; Clark's O. P.; Clark's Tip; Buffalo.)  
No. .... 1 3 5  
Doz. pair ..... \$0.75 1.35 2.70  
**Mortise Shutter:**  
(L. & P., O. S., Dixie, &c.)  
No. .... 1 1½ 2 2½  
Doz. pair ..... \$0.70 .65 .60 .55  
**Mortise Reversible Shutter (Buffalo, &c.):**  
No. .... 1 1½ 2  
Doz. pair ..... \$0.70 .65 .60  
North's Automatic Blind Fixtures, No. 2, for Wood, \$9.00; No. 3, for Brick, \$11.50 ..... 30¢  
Charles Parker Co. .... 70¢75¢  
Parker Wire Goods Co.:  
Hale & Benjamin Automatic Blind Hinges ..... 20¢  
Hale's Blind Awning Hinges, No. 110, for wood, \$9.00; No. 111, for brick, \$9.00 ..... 20¢  
Reading's Gravity ..... 30¢  
Sargent's, Nos. 1, 3, 11 and 13, 75¢10¢  
Stanley's Steel Gravity Blind Hinges, ¾ doz. sets, without screws, \$9.00; with screws, \$1.20.  
Wrightsville Hardware Co.:  
O. S., Lull & Porter ..... 75¢10¢5¢  
Queen City Reversible ..... 75¢10¢  
Shepard's Noiseless, Nos. 60, 65, 55 ..... 75¢10¢  
Niagara, Gravity Locking, Nos. 1, 3 & 5 ..... 75¢10¢5¢  
1868, Old Pat'n, Nos. 1, 3 & 5 ..... 75¢10¢5¢  
Tip Pat'n, Nos. 1, 3 & 5, 75¢10¢5¢  
Buffalo Gravity Locking, Nos. 1, 3 & 5 ..... 75¢10¢5¢  
Shepard's Double Locking, Nos. 20 & 25 ..... 70¢  
Champion Gravity Locking, Nos. 75 & 105 ..... 70¢  
Steamboat Gravity Locking, No. 10, 75¢  
Pioneer, Nos. 60, 65 & 55 ..... 75¢  
Empire, Nos. 101 & 103 ..... 70¢  
W. H. Co.'s Mortise Gravity Locking, No. 2 ..... 60¢  
**Gate Hinges—**  
Clark's or Shepard's Doz. sets:  
No. .... 1 2 3  
Hinges with Latches \$2.00 2.70 5.00  
Hinges only ..... 1.40 2.05 3.80  
Latches only ..... 70 70 35  
New England:  
With Latch ..... doz. \$2.00  
Without Latch ..... doz. \$1.60  
Reversible Self-Closing:  
With Latch ..... doz. \$1.75  
Without Latch ..... doz. \$1.35  
Western:  
With Latch ..... doz. \$1.75  
Without Latch ..... doz. \$1.15  
Wrightsville Hardware Co.:  
Shepard's or Clark's, doz. sets, Nos. 1, 2, 3  
Hinges with Latches ..... \$2.00 2.70 5.00  
Hinges only ..... 1.40 2.05 3.80  
Latches only ..... 70 70 35  
**Pivot Hinges—**  
Bommer Bros. Pivot ..... 40¢  
Lawson Mfg. Co. Matchless ..... 45¢  
**Spring Hinges—**  
Holdback Cast Iron ..... See Trade  
Non-Holdback, Cast Iron Report.  
J. Bardsley:  
Bardsley's Non-Checking Mortise Floor Hinges ..... 45¢  
Bardsley's Patent Checking ..... 15¢  
Bommer Bros.:  
Bommer Ball Bearing Floor Hinges ..... 40¢  
Bommer Spring Hinges ..... 40¢  
No. 990 Wrot. Steel Hold Back ..... ¾ gr. \$9.00  
Chicago Spring Butt Co.:  
Chicago Spring Hinges ..... 25¢  
Triple End Spring Hinges ..... 50¢  
Chicago (Ball Bearing) Floor Hinge ..... 50¢  
Garden City Engine House ..... 25¢  
Keene's Saloon Door ..... 25¢  
Columbian Hardware Co.:  
Acme, Wrought Steel ..... 30¢  
Acme, Brass ..... 25¢  
American ..... 30¢  
Columbia, No. 14 ..... ¾ gr. 39.00  
Columbia, No. 18 ..... ¾ gr. 25.00  
Columbia, Adjustable ..... ¾ gr. \$12.00  
Gem, new list ..... 30¢  
Clover Leaf ..... ¾ gr. \$12.00  
Oxford, new list ..... 30¢  
Lawson Mfg. Co. Matchless ..... 30¢  
Richards Mfg. Co.:  
Superior Double Acting Floor Hinges ..... 40¢  
Shelby Spring Hinge Co.:  
Rockeye All Steel Holdback Screen Door ..... ¾ gr. \$9.00  
Ball Bearing Floor Hinge ..... 50¢  
Ohio Detachable Screen Door Hinge ..... ¾ gr. \$12.00  
The Stover Mfg. Co.:  
Ideal, No. 16, Detachable, ¾ gr. \$12.50  
Ideal, No. 4 ..... ¾ gr. \$9.00  
New Idea No. 1 ..... ¾ gr. \$9.00  
New Idea, Double Acting ..... 45¢  
New Idea Floor ..... 45¢  
Van Wagner:  
Ball Bearing ..... 25¢  
No. 777 Sh't Steel Holdb'k, ¾ gro. pr. \$9



### Wrought Iron Hinges— Strap and T Hinges, etc., list December 20, 1904:

Light Strap Hinges.....	70¢
Heavy Strap Hinges.....	75¢
Light T Hinges.....	65¢
Heavy T Hinges.....	60¢
Extra Heavy T Hinges.....	70¢
Hinge Hoses.....	50¢
Cor. Heavy Strap.....	75¢
Cor. Heavy T.....	70¢
Screw Hook.....	6 to 12 in. 1b. 3½¢
and Strap.....	1½ to 20 in. 1b. 3½¢
	22 to 36 in. 1b. 3¢

Screw Hook and Eye:	
¾ to 1 inch.....	1b. 6¢
¾-inch.....	1b. 7¢
½-inch.....	1b. 9¢

### Hitchers, Stall— Covert Mfg. Co., Stall Hitchers.....35%

### Hods— Coal—

Inch.....	15	16	17	18
Galt, Open.....	\$2.50	2.75	3.00	3.25
Jap. Open.....	\$1.90	2.10	2.25	2.55
Galt, Funnel.....	\$3.00	3.30	3.60	3.90
Jap. Funnel.....	\$2.45	2.65	2.85	3.30

### Masons' Etc.— Avery-Caldwell Mfg. Co.:

Steel Brick.....	each \$1.00
Steel Mortar.....	each \$1.25
Cleveland Wire Spring Co.:	
Steel Brick, No. 162.....	each \$0.95
Steel Mortar, No. 158.....	each \$1.25

### Hoes— Eye— Scovill and Oval Pattern.....

Grub, list Feb. 23, 1899.....	60¢ 10¢ 60¢ 10¢ 10¢
	70¢ 10¢ 75¢ 10¢

### D. & H. Scovill.....

NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.

Cronk's Weeding No. 1, \$2.00; No. 2, \$2.25  
Ft. Madison Cotton Hoe.....70¢ 10¢ 10¢  
Ft. Madison Crescent Cultivator Hoe.....70¢ 10¢  
Ft. Madison Mattock Hoe.....70¢ 10¢  
Ft. Madison Regular Weight.....70¢ 10¢  
Ft. Madison Junior Size.....70¢ 10¢  
Ft. Madison Sprouting Hoe.....70¢ 10¢  
Ft. Madison Dixie Tobacco Hoe.....70¢ 10¢

Kretzinger's Out Easy.....70¢ 10¢  
Warren Hoe.....70¢ 10¢  
W. & C. Ivanhoe.....70¢ 10¢  
B. B. 6 in. Cultivator Hoe.....70¢ 10¢  
B. B. 6 in. Hoe.....70¢ 10¢  
Acme Weeding.....70¢ 10¢  
W. & C. L'ning Shuffie Hoe.....70¢ 10¢

### Hoisting Apparatus— See Machines, Hoisting.

### Holders— Bit—

Angular, ½ doz.....	\$24.00.....45¢ 10¢
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### Door—

Bardley's.....	45¢
Empire.....	50¢
Pullman.....	50¢

### File and Tool— Nicholson File Holders and File Handles.....33½¢ 40¢

### Fruit Jar— Triumph Fruit Jar Holder, ½ gross, \$10.80; ½ doz.....\$1.25

### Hones—Razor— Pike Mfg. Co., Belgian, German and Swaty.....50%

### Hooks—Cast Iron—

Bird Cage, Reading.....	40%
Bird Cage, Sargent's List.....	60¢ 10¢
Ceiling, Sargent's List, Nos. 29, 32, 33, 129, 132, 133 and 135.....	50¢ 10¢ 10¢
Clothes Line, Reading List.....	40%
Clothes Line, Sargent's List.....	50¢ 10¢
Coat and Hat, Sargent's List.....	50¢ 10¢
Clothes Line, Stowell's.....	70%
Coat and Hat, Reading.....	45¢ 20¢
Coat and Hat, Stowell's.....	70%
Coat and Hat, Wrightsville.....	60%
Harness, Reading List.....	40%
Harness, Stowell's.....	60%
School House, Stowell's.....	70%

### Wire—

Belt.....	80¢ 10¢ 10¢
Wire C. & H. Hooks.....	75¢ 10¢ 75¢ 10¢ 10¢
Columbian Hdw Co., Gem.....	70¢ 10¢
Parker Wire Goods Co., King.....	75¢ 10¢
Van Wagoner, Coat and Hat.....	70%
Western W. G. Co., Molding.....	75%
Wire Goods Co.:	
Acme.....	60¢ 10¢
Chief.....	70%
Crown.....	75%
Car.....	65%
V Braces.....	60%
Car Harness.....	50¢ 10¢

### Wrought Iron—

Box, 6 in., per doz.....	\$1.00; 8 in., \$1.25; 10 in., \$2.30.
Cotton.....	doz. \$1.05@1.25
Wrought Staples, Hooks &c.....	See Wrought Goods.

### Miscellaneous— Hooks, Bench, see Staps, Bench.

Bush, Light, doz.....	\$1.75; Medium, \$5.35; Heavy, \$6.25
Grass, beat, all sizes, per doz.....	\$1.50
Grass, common grades, all sizes, per doz.....	\$1.30
Whiffletree.....	1b. 5¢ 6¢
Hooks and Eyes:	
Brass.....	60¢ 10¢ 60¢ 10¢ 10¢
Malleable Iron.....	70¢ 10¢ 70¢ 10¢ 10¢
Covert Mfg. Co., Gate and Scuttle Hooks.....	35%
Covert Saddlery Works' Self Locking Gate and Door Hooks.....	60%
Ft. Madison Out-Easy.....	½ doz. \$3.25 net

### Bench Hooks—See Bench Stops.

### Corn Hooks—See Corn Knives, Corn.

### Horse Nails— See Nails, Horse.

### Horseshoes—

See Shoes, Horses.

### Hose, Rubber—

Garden Hose, ¾-inch:

Competition.....	ft. 5 @ 6¢
3-ply Standard.....	ft. 8 @ 9¢
4-ply Standard.....	ft. 10 @ 11¢
3-ply extra.....	ft. 11 @ 13¢
4-ply extra.....	ft. 14 @ 16¢

Cotton Garden, ¾-in., coupled:

Low Grade.....	ft. 8 @ 9¢
Fair Quality.....	ft. 10 @ 11¢

### Irons— Sad—

From 4 to 10.....	1b. 2½¢ 3¢
B. B. Sad Irons.....	1b. 3½¢ 3½¢
Chinese Laundry.....	1b. 3½¢ 5¢
Chinese Sad.....	1b. 4 @ 4½¢

Mrs. Potts', cents per act:

Nos.....	60 55 60 65
Jap'd Tops.....	62 59 72 69
Tin'd Tops.....	65 62 75 72

New England Pressing, 1b. 3½¢ 4¢

### Pinking—

Pinking Irons.....	doz. 50¢ 60¢
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### Irons, Soldering

See Copper.

### Jacks, Wagon—

Covert Mfg. Co.:

Auto Screw.....	30¢ 25¢
Steel.....	45%
Covert's Saddlery Works:	
Daisy.....	60¢ 10¢
Victor.....	60¢ 10¢
Lockport.....	50%
Lane's Steel.....	30¢ 10¢ 2¢
Richards' Tiger Steel, No. 130.....	50¢ 10¢
Smith & Hemenway Co.'s.....	25%

### Kettles—

Brass, Spun, Plain.....	20¢ 25%
Enameled and Cast Iron—See Ware, Hollow.	

### Knives—

### Butcher, Kitchen, &c.—

Foster Bros. Butcher, &c.....	30%
Wilkinson Shear & Cutlery Co.....	50%

### Corn—

Withington Acme.....	½ doz. \$2.65;
Dent, \$2.75; Adj. Serrated, \$2.20;	
Serrated, \$2.10; Yankee No. 1, \$1.50;	
Yankee No. 2, \$1.15.	

### Drawing—

Standard List.....	75%
C. E. Jennings & Co., Nos. 45, 46, 47, Jennings & Griffin, Nos. 41, 42.....	60%
Ohio Tool Co.'s.....	70%
Swan's.....	75%
Watrous.....	16%
L. & J. White.....	20¢ 5¢ 25%

### Hay and Straw—

Serrated Edge, per doz.....	\$5.25 @ 5.50
Iwan's Sickle Edge.....	per doz. \$9.50
Iwan's Serrated.....	per doz. \$10.00

### Mining—

Buffalo.....	½ gro. \$13.00
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### Miscellaneous—

Farriers'.....	doz. \$3.00 @ 3.25
Wentholm's.....	½ doz. \$3.00 @ 3.25

### Knobs—

Base, 2½-inch, Birch, or Maple, Rubber tip.....	gro. \$1.15 @ 1.20
Carriage, Jap., all sizes.....	gro. 40¢ 45¢

### Door, Mineral.....

Door, Por. Jap'd.....	doz. 70¢ 75¢
Door, Por. Nickel.....	doz. \$2.05 @ 2.15
Bardley's Wood Door, Shutters, &c.....	15%
Picture, Sargent's.....	60¢ 10¢ 10%

### Lacing, Leather—

See Belting, Leather.

### Ladders, Store, &c.—

Lane's Store.....	25%
Myers' Noiseless Store Ladders.....	50%
Richards' Mfg. Co.:	
Improved Noiseless, No. 112.....	50%
Climax Shelf, No. 113.....	50%
Trolley, No. 109.....	50%

### Ladles, Melting—

L. & G. Mfg. Co. (low list).....	25%
P. S. & W.....	50%
Reading.....	60%
Sargent's.....	50¢ 10%

### Lanterns—Tubular—

Regular Tubular, No. 0.....	doz. \$4.25 @ 4.35
Lift Tubular, No. 0.....	doz. \$4.50 @ 4.65
Hinge Tubular, No. 0.....	doz. \$4.50 @ 4.65

### Other Styles.....

No. 1, 2½-inch.....	\$2.50 @ 2.75
No. 2, 3-inch.....	\$2.75 @ 3.00

### Bull's Eye Police—

No. 1, 2½-inch.....	\$2.50 @ 2.75
No. 2, 3-inch.....	\$2.75 @ 3.00

### Lasts and Stands, Shoe—

Stowell's Atlas, Malleable Iron.....	50%
Stowell's Badger, Cast Iron.....	50%

### Latches—Thumb—

Roggin's Latches, with screw.....	doz. 35¢ 40¢
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### Door—

Cronk & Carrier Mfg. Co., No. 101.....	½ doz. \$2.90
Cronk & Carrier Mfg. Co., Latch, Hasp and Staples.....	50%
Richards' Bull Dog, Heavy, No. 105.....	50¢ 5%
Richards' Trump, No. 107.....	\$1.50

### Leaders, Cattle

Small.....	doz. 50¢; large, 60¢
Covert Mfg. Co., Cotton and Hemp.....	45%

### Lifters, Transom—

R. & E.....	33½%
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### Lines—

Wire Clothes, Nos. 18.....	19 20
100 feet.....	\$2.20 2.60 1.70
75 feet.....	\$1.80 1.70 1.30

### Samson Cordage Works:

Solid Braided Chalk, Nos. 0 to 3.40;	
Silver Lake Braided Chalk, No. 0 to 3.40;	
No. 1, \$6.50; No. 2, \$7.00; No. 3, \$7.50.....	gr. 20%
Masons' Lines, Shade Cord, &c.....	
White Cotton, No. 3½, \$1.50; No. 4, \$2.00.....	

\$2.00; No. 4½, \$2.50; Colors, No. 3½, \$3.75; No. 4, \$2.25; No. 4½, \$3.75; Linen, No. 3½, \$2.50; No. 4, \$3.50; No. 4½, \$4.50.....	20%
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Tent and Awning Lines: No. 5,

White Cotton, \$7.50; Drab Cotton, \$8.50.....	20%
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Clothes Lines, White Cotton: 50 ft., \$2.75; 60 ft., \$3.25; 70 ft., \$3.75; 75 ft., \$4.00; 80 ft., \$4.25; 90 ft., \$4.75; 100 ft., \$5.25.....	20%
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Annular Waterproof Clothes, 50 ft.,  
\$3.00; 60 ft., \$3.50; 70 ft., \$4.00; Air  
Line, \$2.00; Acme, \$1.00; Alabama,  
\$15.00; Empire, \$14.00; Advance,  
\$13.50; Oriole, \$20.00; Albemarle,  
\$13.50; Eclipse, \$12.50; Chicago,  
\$11.00; Standard, \$10.00; Columbia,  
\$8.50; Allston, \$12.50; Calhoun, \$11.00.

### Locks— Cabinet—

Cabinet Locks.....	33½¢ @ 33½¢ 47½¢
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### Door Locks, Latches, &c.—

NOTE.—Net Prices are very often made  
on these goods.

Reading Hardware Co.....	40%
R. & E. Mfg. Co.....	40%
Sargent & Co.....	40¢ 10¢
Stowell's Steel Door Latches.....	50%

### Elevator—

Stowell's.....	50%
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### Padlocks—

Wrought Iron.....	75¢ 10¢ 45¢ 80¢ 65¢
R. & E. Mfg. Co. Wrought Steel and Brass.....	75¢ 10%

### Sash, &c.—

Ives' Patent.....	62½%
Bronze and Brass.....	62½%
Crescent.....	50¢ 10%
Iron.....	62½%
Window Ventilating.....	60%
Robison Patent Ventilating Sash Lock.....	40%
Wrought Bronze and Brass.....	55%
Wrought Steel.....	55%
Pullman Patent Ventilating Lock.....	25%
Reading.....	40%

### Machines—Boring—

Comm. Up'r, without Augers.....	\$2.00
Comm. Ang'r, without Augers.....	\$2.25
Swan's Improved.....	40¢ 10%

Jennings' Nos. 1 and 4.....

Miller's Falls.....	57%
Snell's, Rice's Pat. 2.50.....	2.75

### Corking—

Reisinger Invinible Hand Power.....	½ doz. \$48.00
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### Fence—

Williams' Fence Machines.....	each, \$5.50
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### Hoisting—

Moore's Anti-Friction Differential Pulley Block.....	30%
Moore's Hand Hoist, with Lock Brake.....	20%

### Ice Cutting—

Chandler's.....	12½%
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### Washing

Boss Washing Machine Co.: Per doz.	
Boss No. 1.....	\$37.00
Boss Rotary.....	\$34.00
Champion Rotary Banner No. 1.....	\$54.00
Standard Champion No. 1.....	\$48.00
Standard Perfection.....	\$36.00
Cut Square Western.....	\$30.00
Uned's American, Round.....	\$30.00

### Mallets—

Hickory.....	45¢ 50¢ 50%
Lignumvita.....	45¢ 50¢ 50%
Tinners' Hickory and Apple- wood.....	doz. 45¢ 50%

### Mangers, Stable—

Swett Iron Works.....	50%
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Slater's Felt (roll 500 sq. ft.) .75¢  
K. H. M. Stone Surfaced Roofing  
(roll 110 sq. ft.) .25¢

**Sand and Emery**  
Flint Paper and Cloth .60¢@1.00¢  
Garnet Paper and Cloth .25¢  
Emery Paper and Cloth .50¢@1.00¢

**Parers—Apple—**  
Advance . . . . . doz. \$4.00  
Hawthorn . . . . . doz. \$4.00  
Bonanza Improved . . . . . doz. \$4.50  
Daisy . . . . . doz. \$4.00  
Dandy . . . . . each \$7.50  
Eureka Improved . . . . . each \$20.00  
Family Hay State . . . . . doz. \$15.00  
Improved Hay State . . . . . doz. \$26.00  
Little Star . . . . . doz. \$5.00  
New Lightning . . . . . doz. \$7.00  
Reading 72 . . . . . doz. \$3.25  
Reading 78 . . . . . doz. \$6.25  
Rocking Table . . . . . doz. \$6.25  
Turn Table . . . . . doz. \$6.25  
White Mountain . . . . . doz. \$5.00

**Potato—**  
Saratoga . . . . . doz. \$7.00  
White Mountain . . . . . doz. \$6.00

**Picks and Mattocks—**  
List Feb 23, 1899 . . . . . 75¢@1.45¢  
Cronk's Handled Garden Mattock  
Cronk's . . . . . 35¢@.40¢

**Pinking Irons—**  
See Irons, Pinking.

**Pins, Escutcheon—**  
Brass . . . . . 60¢@60¢@10¢  
Iron, list Nov. 11, '85 . . . . . 60¢@60¢@10¢

**Pipe, Cast Iron Soil—**  
Carload lots.

Standard, 2-6 in. . . . . 60¢  
Extra Heavy, 2-6 in. . . . . 70¢  
Fittings . . . . . 75¢

**Pipe, Merchant—**  
Carload Lots.

**Steel.**  
Blk. Galv. Blk. Galv.  
1/4 to 1/2 in. . . . . 51¢ 65¢ 59¢  
3/4 to 1 in. . . . . 59¢ 69¢ 57¢  
1 to 2 in. . . . . 65¢ 73 1/2¢ 63 1/2¢  
7 to 12 in. . . . . 55¢ 68 1/2¢ 53¢

**Pipe, Vitrified Sewer—**  
Carload lots.

Standard Pipe and Fittings, 2  
to 24 in. . . . . 68¢

New England . . . . . 68¢  
New York and New Jersey . . . . . 71¢  
Maryland, Delaware, E. Pa. 75¢  
West. Pa. and West Va. . . . . 71¢  
Virginia . . . . . 76¢  
Ohio, Michigan and Ky. . . . . 77¢  
Indiana . . . . . 77¢

NOTE.—Carload lots are generally delivered.

**Pipe, Stove—**  
Edwards' Nested Stove Pipe:

C. L. L. C. L.  
5 in., per 100 joints . . . . . \$3.50  
6 in., per 100 joints . . . . . 8.50  
7 in., per 100 joints . . . . . 9.50

**Planes and Plane Irons—**  
Wood Planes—

Bench, first qual. . . . . 40¢@10¢  
Bench, second qual. . . . . 35¢@10¢  
Molding . . . . . 33¢@10¢  
Bailey's (Stanley R. & L. Co.) . . . . . 40¢  
Chapin-Stephens Co. . . . . 40¢@40¢@10¢

Bench, First Quality . . . . . 40¢@40¢@10¢  
Bench, Second Quality . . . . . 50¢@50¢@10¢  
Molding . . . . . 33¢@33¢@10¢  
Toy and German . . . . . 40¢@40¢@10¢  
Chapin's . . . . . 60¢  
Ohio Tool Co. . . . . 40¢@40¢@10¢

Bench, First Quality . . . . . 40¢@40¢@10¢  
Bench, Second Quality . . . . . 50¢@50¢@10¢  
Molding . . . . . 33¢@33¢@10¢  
Adjustable . . . . . 60¢  
Union . . . . . 60¢

**Iron Planes—**  
Bailey's (Stanley R. & L. Co.) . . . . . 40¢  
Chapin's Iron Planes . . . . . 50¢@10¢  
Miscellaneous Planes (Stanley R. & L. Co.) . . . . . 60¢  
Ohio Tool Co. Iron Planes . . . . . 60¢  
Sargent's . . . . . 60¢@10¢  
Union . . . . . 60¢

**Plane Irons—**  
Wood Bench Plane Irons . . . . . 25¢@10¢@30¢

Buck Bros. . . . . 30¢  
Chapin-Stephens Co. . . . . 30¢@30¢  
Ohio Tool Co. . . . . 30¢  
Stanley R. & L. Co. . . . . 35¢  
Union . . . . . 50¢  
L. & J. J. White . . . . . 20¢@50¢@25¢

**Planters, Corn, Hand—**  
Kohler's Eclipse . . . . . doz. \$3.50

**Plates—**  
Felloe . . . . . lb. 3¢@1 1/4¢  
Self-Sealing Pie Plates (S. S. & Co.) . . . . . doz. \$2.00 . . . . . 50¢

**Pliers and Nippers—**  
Button Pliers . . . . . 75¢@10¢@80¢  
Gas Burner, per doz., 5 in. . . . . \$1.25  
@ \$1.30; 6 in. . . . . \$1.45 @ \$1.50.  
Gas Pipe . . . . . 7 8 10 12-in.  
\$2.00 \$2.25 \$3.00 \$3.75

Acme Nippers . . . . . 50¢@5¢  
Cronk & Carrier Mfg. Co. . . . . 75¢@10¢  
American Button . . . . . 75¢@10¢  
Cronk's . . . . . 60¢  
Stub's Pattern . . . . . 50¢  
Combination and others . . . . . 35¢  
Heller's Farriers' Nippers, Pincers  
and Tools . . . . . 40¢@10¢@40¢@10¢  
The Nettleton Mfg. Co. Reversible  
Cutting Nippers . . . . . 50¢  
P. S. & W. Timmers' Cutting Nip-  
pers . . . . . 40¢  
Swedish Side, End and Diagonal Cut-  
ting Pliers . . . . . 50¢  
Utica Drop Forge & Tool Co. . . . . 40¢  
Pliers and Nippers, all kinds . . . . . 40¢

**Plumbs and Levels—**  
Chapin-Stephens Co. . . . . 30¢@30¢@10¢@10¢  
Plumbs and Levels . . . . . 30¢@30¢@10¢@10¢  
Chapin's Imp. Brass Cor. . . . . 30¢@30¢@10¢@10¢  
Pocket Levels . . . . . 30¢@30¢@10¢@10¢  
Diston's Plumbs and Levels . . . . . 70¢  
Diston's Pocket Levels . . . . . 70¢  
C. E. Jennings & Co.'s Iron . . . . . 30¢

C. E. Jennings & Co.'s Iron, Adjust-  
able . . . . . 40¢@10¢  
Stanley R. & L. Co. . . . . 45¢  
Stanley's Duplex . . . . . 35¢  
Woods' Extension . . . . . 30¢

**Poachers, Egg—**  
Buffalo Steam Egg Poachers, doz. . . . .  
No. 1, \$6.00; No. 2, \$9.00; No. 3,  
\$9.00; No. 4, \$12.00 . . . . . 50¢

**Points, Glaziers—**  
Bulk and 1-lb. papers, lb. 8 1/2¢@9¢  
1/2-lb. papers . . . . . lb. 9¢@10 1/4¢  
1/4-lb. papers . . . . . lb. 9 3/4¢@10 1/4¢

**Pokes, Animal—**  
Ft. Madison Hawk-eye . . . . . doz. \$3.25  
Ft. Madison Western . . . . . doz. \$4.00

**Police Goods—**  
Manufacturers' Lists . . . . . 25¢@25¢@5¢  
Tower's . . . . . 25¢

**Polish—Metal, Etc—**  
Glasbrite, No. 2, 5 lb can (powder),  
each, \$1.25; doz. \$12.00; No. 2, 10 lb  
can (cake), each, \$2.50; doz. \$24.00.  
Prestolite Liquid, No. 1 (1/2 pt.), . . . . .  
doz. \$3.00; No. 2 (1 qt.), \$9.72; . . . . . 40¢  
Prestolite Paste . . . . . 40¢  
George William Hoffman:  
U. S. Metal Polish Paste, 3 oz.  
boxes, doz. \$5.00; doz. \$4.50;  
1/2 lb boxes, doz. \$1.25; 1 lb  
boxes, doz. \$2.25.  
U. S. Liquid, 8 oz. cans, doz. . . . .  
\$1.25; doz. \$12.00.  
Barkeepers' Friend Metal Polish, doz.  
\$1.75; doz. \$18.00.  
Wynn's White Silk, 1/2 pt. cans, doz.  
doz. . . . . \$2.00

**Stove—**  
Black Eagle Benzine Paste, 5 lb cans,  
each, \$1.25; doz. \$12.00; No. 2, 10 lb  
can (cake), each, \$2.50; doz. \$24.00.  
Prestolite Liquid, No. 1 (1/2 pt.), . . . . .  
doz. \$3.00; No. 2 (1 qt.), \$9.72; . . . . . 40¢  
Prestolite Paste . . . . . 40¢  
George William Hoffman:  
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boxes, doz. \$5.00; doz. \$4.50;  
1/2 lb boxes, doz. \$1.25; 1 lb  
boxes, doz. \$2.25.  
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Barkeepers' Friend Metal Polish, doz.  
\$1.75; doz. \$18.00.  
Wynn's White Silk, 1/2 pt. cans, doz.  
doz. . . . . \$2.00

**Stove—**  
Black Eagle Benzine Paste, 5 lb cans,  
each, \$1.25; doz. \$12.00; No. 2, 10 lb  
can (cake), each, \$2.50; doz. \$24.00.  
Prestolite Liquid, No. 1 (1/2 pt.), . . . . .  
doz. \$3.00; No. 2 (1 qt.), \$9.72; . . . . . 40¢  
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doz. \$3.00; No. 2 (1 qt.), \$9.72; . . . . . 40¢  
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## CURRENT METAL PRICES.

OCTOBER 4, 1905.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market report.

IRON AND STEEL—		METALS—		Iron Pipe Sizes—Brass	
Bar Iron from store—		Tin—		Brazed Brass Tubing.	
Refined Iron:		Tin Plates—		Discount from List June 6, 1898, 33½¢.	
1 to 1½ in. round and square.....		American Charcoal Plates (per box.)		Bronze and Copper Tubing advance on Brass List 3¢	
1½ to 4 in. x ¾ to 1 in.....		A.A.A. Charcoal:		Roll and Sheet Brass—	
1½ to 4 in. x ¼ to 5-16.....		IC, 14 x 20.....		Discount from List June 6, 1898, 25¢.	
Rods—¾ and 1-16 round and square.....		IX, 14 x 20.....		Spelter—	
Angles:		A. Charcoal:		Western.....	
3 in. x ¾ in. and larger.....		IC, 14 x 20.....		Zinc.	
3 in. x ¾ in. and ¼ in.....		IX, 14 x 20.....		No. 9, base, caaks, ½ m 8.00¢   Open.....	
1½ to 3½ in. x ¼ in.....		American Coke Plates—Bessemer—		Lead.	
1½ to 2½ in. x 3-16 in. and thicker.....		IC, 14 x 20.....		American Pig.....	
1 to 1½ in. x ¾ in.....		IX, 14 x 20.....		Old Lead in exchange, 4¢ ½ m	
¾ x ¼ in.....		American Terne Plates—		Soldier.	
¾ x ¼ in.....		IC, 20 x 28.....		½ & ¾, guaranteed.....	
¾ x ¼ in.....		IX, 20 x 28.....		No. 1.....	
Teas:		Copper—		Refined.....	
1 in.....		Lake Ingot.....		Prices of Solder indicated by private brand vary according to composition.	
1½ in.....		Casting.....		Antimony—	
1½ to 2½ in.....		Sheet Copper Hot Rolled, 16 oz.....		Cookson.....	
8 in. and larger.....		Sheet Copper Cold Rolled, 1¢ ½ m advance over Hot Rolled.		U. S.....	
Beams.....		Sheet Copper Polished 20 in. wide and under, 1¢ advance over Cold Rolled.		Hungarian and Japanese.....	
Channels, 3 in. and larger.....		Sheet Copper Polished over 20 in. wide, 2¢ advance over Cold Rolled.		Aluminum—	
Bands—1½ to 6 x 3-16 o No. 8.....		Bottoms, Pits and Flats.....		No. 1 Aluminum (guaranteed over 99% pure), in ingot for remelting:	
Burdens "H. B. & S." Iron, base price.....		Polished Copper, 1¢ ½ m more than Polished.		Small lots.....	
Burdens "H. B. & S." Iron, base price.....		Seamless Brass Tubes—		100-lb 10-lb.....	
"Ulster".....		Outside Diameter. Net. Base Price 20¢		Old Metals.	
Norway Shapes.....		Stub's		Dealers' Purchasing Prices Paid in New York.	
Merchant Steel from Store—		W G.		Heavy Copper.....	
Bessemer Machinery.....		4-11		Light and Tinned Copper.....	
Toe Calk, Tire and Sleigh Shoe.....		12		Heavy Brass.....	
Best Cast Steel, base price in small lots.....		13		Light Brass.....	
Sheets from Store—		14		Lead.....	
Black.		15		Zinc.....	
One Pass, C.R. R. G.		16		No. 1 Pewter.....	
Soft Steel. Cleaned.		17		No. 2 Pewter.....	
No. 14.....		18		Pure Aluminum, sheet.....	
Nos. 18 to 21.....		19		No. 1 Yard Wrought.....	
No. 22.....		20		Wrought Pine.....	
No. 23.....		21		No. 1 Machinery Cast.....	
Russia, Planished, &c.		22		Stove Pla. e.....	
Genuine Russia, according to assortment.....		23			
Patent Planished.....		24			
Galvanized.		25			
Nos. 14 to 16.....					
Nos. 22 to 24.....					
No. 25.....					
No. 28.....					
No. 20 and lighter 36 inches wide, 25¢ higher.					

## THE IRON AGE

The oldest paper in the world devoted to the interests of the Hardware, Iron, Machinery and Metal Trades,  
and a standard authority on all matters relating to those branches of industry.

ISSUED EVERY THURSDAY MORNING.

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